COAL AGE

Vol. 7 NEW YORK, FEBRUARY 27, 1915 No. 9

Success

The aim of all effort, in fact of all life, is the attainment of success. The common thief strives as hard to succeed in his evil avocation as the upright man who preaches the gospel. Every human thought bears a relation to success, and no single word in the English language has a broader appeal.

o o o

IT IS FOR THIS REASON we propose to print a real "*Success Number*" of COAL AGE on April 3, and we want each and every one of our readers to cooperate with us in making this special issue the kind of a paper the subject implies.

We want it to be so interesting you will not lay it aside until you have finished reading it all; and, in addition, we intend to present in this particular issue more valuable educational coal-mining information than we have heretofore crowded into any three or four consecutive copies of this paper.

We want something from every reader, no matter whether the contribution is a long article, a few lines, a single thought, or only a suggestion. It makes no difference whether you are a miner, foreman, superintendent or president, whatever you send in will have close attention, and if published, you will be properly recompensed.

You say: I would like to help, but how can I do so? The answer is simple. Send us a description of the most successful thing you are familiar with at the mine where you work. It may be quite an elaborate machine, or it may be a simple contrivance. It may be the product of a great manufacturer, or it may be entirely homemade. It may be underground or on the surface. It may be a material object, or only a plan on paper.

It may be a system having to do with actual mine development, or it may be a night school devoted only to mental betterment. Whatever it is, if it is a success, and you can give facts to prove such is the case, let us have it.

Perhaps you are so busy that all you can send us is a suggestion. If that's the situation, we promise you we'll follow up your idea. Maybe you know a man who has accomplished a whole lot along mining lines, and whose life story would inspire others to bigger accomplishments. Tell us in confidence about him, or better still, prepare a short story of facts concerning him. And remember there are foremen and superintendents who are actually bigger successes than many mining presidents. Success is measured by what we overcome rather than how far we travel. It's easy to cover distance on a smooth level road.

Two brief announcements of this coming issue of COAL AGE have been made, and much to our surprise, a number of contributions have already been received. This early show of interest leads us to believe that, although the "*Success Number*" will be greatly enlarged, there may not be room for everything that comes in, so in fairness to all we will enter each contribution in the order of its receipt; those reaching us first will be given earliest attention, while the others left over—if suitable for publication—will be printed in subsequent issues.

DO YOU BELIEVE *it is wise to carefully improve all one's opportunities*? DID YOU EVER PROCLAIM *this brand of philosophy*? *Then practice what you preach, and* START PREPARATION OF YOUR "SUCCESS" ARTICLE TODAY. *If uncertain on any point, write us.*

Ideas and Suggestions

An Opportunity and a Duty

SYNOPSIS—Will the owners, operators and workers engaged in the coal-mining industry in Alabama help to eradicate the fee system which preys on the workmen, especially on the negro race?

It is not every day that opportunity and duty meet, or present themselves at the same time. Whenever they do a splendid chance is offered to do the thing, whatever it is, that duty impels.

It is suggested to us that such a condition exists at present in Alabama, where the legislature is in session and before which a bill will be presented providing for a constitutional amendment to eliminate the iniquitous fee system which for years has been an incubus to this state and its progress. The people have already expressed themselves as desiring this legislation. However it must be understood that it will not be a "cinch" to secure it on account of the opposition likely to develop from those so strongly entrenched in the system.

The "fee system" in Alabama, Tennessee and other Southern states provides in lieu of salaries that court officials such as judges, sheriffs, solicitors, court clerks, etc., be paid by a system of fees exacted from the unfortunates convicted of crime. In fact it is not necessary that persons be convicted—they need only be arrested (the fact that no bond has to be made by the party swearing out warrants of arrest makes this mighty easy) and put in jail to insure the sheriff and other officials at least $5.30 per head, regardless of whether they ever secure even a trial or conviction. In thousands of cases the fees mount up enormously and the officials paid under this system draw princely stipends. It has been said that the position of sheriff of Jefferson County in the heart of the coal-mining district of Alabama pays sometimes as much or more per year than the office of President.

Such a condition can mean but one thing. The poorer classes—the workers—pay the price of such a system.

The owners and operators of coal mines in Alabama are vitally interested in the eradication of such a plan of paying public officials. The scheme is successful for the officials who are paid in fees because they can make it so by increasing the number of arrests. It is destructive to the success of coal-mining operations, however, because it demoralizes labor.

The largest single class of labor in Alabama's coal mines is the negro. It is open knowledge that the beneficiaries of the present fee system fatten and grow rich at the expense of the negro and his employer. This is largely due to ignorance and a certain racial weakness of the negro for petty gambling. He is, therefore, the principal victim of the plan. Those familiar with mining operations in Alabama will recall many instances where the negroes have been ensnared into "crap games" on Sundays and holidays and then arrested in a bunch by the active deputies of the sheriff because of the fees that would follow. Both the workers and the operators had to pay for this kind of thing and are still doing it.

It is an open fact that some of Alabama's jails stay brimful of prisoners caught in the dragnet of the fee system. Hundreds of men who ought to be and want to be at work are kept there as the result of Sunday arrests, etc., until arrangements are completed whereby the resultant fees will accrue. It is also a well known fact that so flimsy and poor is the evidence in hundreds of these cases that they never get to trial. In Jefferson County alone several hundred such cases were recently nol-prossed because of insufficient evidence, etc.

Here is the opportunity and the duty of Alabama's citizens who are engaged in the mining industry from owner and operator down to the humblest worker in the ranks; that is to *do everything possible to secure the passage of a constitutional amendment doing away forever with the present fee system.*

It will be in line with the work that many of the coal concerns of the state are engaged in looking toward the betterment of working conditions and the improvement of living conditions. The elimination of the fee system will mean increased contentment and prosperity in the mining districts, and the part that those engaged in the industry plan and perform in bringing about this accomplishment will redound to the honor of every man who lends a hand.

Will Alabama's mining men do their plain duty? Let us hope they will.

The Case of the Man Who Quits

By M. D. Cooper*

SYNOPSIS—Coal companies might find it profitable to establish a system of investigation formed on the lines here suggested.

During recent years some companies have given considerable attention to the case of the man who is discharged. Individual inquiries and even bureaus of investigation have been organized to examine the causes of discharge and to assure each employee of just treatment. In this manner it has been found that the man discharged was not always at fault. In some cases the responsibility rested with a fellow employee, in others with the man's boss, and in still others the cause was beyond the control of any of the persons involved. The causes of discharge were discovered to be numerous and varied.

Regardless, however, of the nature of the cause, it stands to reason that a man deserves to be discharged only in those cases where he himself is proved to be at fault. Therefore, the positive identification of the person

*Ellsworth, Penn.

in the wrong, and the assurance that he only will be compelled to accept the consequences, is a matter of more than ordinary importance in maintaining the reputation of an employer.

A movement of more recent origin concerns the man who of his own initiative quits his job. What is known of the causes of his going? Very little at many places. He comes and goes and generally but slight attention is paid to the cause, even though 80 or 90 per cent. of the men leaving a company's employ may belong to this class. An inquiry as to the reason for his voluntary leaving generally reveals one of the following reasons:

1. A better job elsewhere.
2. Dissatisfaction with the present job, the boss or living conditions.

This man's case may be taken up in each instance by getting the answers to three questions. What is his own reason for leaving? What is his boss' reason for his leaving? What does a disinterested investigation reveal as to the cause of his leaving? The answer to the third question may agree with one or both of the answers to the first two, or it may differ entirely from them. The third answer is of course the most difficult to obtain, but when accurately determined is the most valuable of the three. A card index record containing these three questions and their answers should be kept in the cases of those employees who leave of their own accord.

A Record of Each Individual Case

A record of this sort will cost money to establish and maintain. Is it worth it? What are its advantages? In the case of the man who leaves to get a better job, an investigation may reveal little of importance. He perhaps leaves in the friendliest spirit and with the good will of his boss and associates. On the other hand, his going may show up a weakness in organization or stagnation that needs remedying in the department in which he worked. It is, however, the man who leaves dissatisfied who will usually bear the greater amount of attention. Either he will be found to be a chronic "kicker" or else some basis for his dissatisfaction will be brought to light. If the latter proves to be the case, it is very much to the advantage of the management to know about it.

It seems reasonably certain that unsatisfactory conditions surrounding a job, or a mine, or a town are in the end more costly than the expense involved in removing them. Ordinarily, it is not a great loss to have a mediocre workman leave, but if, on leaving, he is able to air his dissatisfaction in descriptions of conditions that cannot be denied, he may easily succeed in keeping better workmen than himself away from the place he left. In other words, if men leave and their employer is indifferent as to the cause of their going, a mine or a town may get a bad name for no other reason than some slight cause of dissatisfaction that could be removed if proper effort was made to find out about it.

In office work alone, it is possible that in some plants enough time could be saved by reducing the number of changes and the expense involved in recording them to pay for the maintenance of this important service.

Where It Affects Production Costs

Of still greater consequence, however, is the question of production and costs. It is well known that new workmen must always be broken in, the time required for this training varying with the skill and experience of the men, but in any case their production during this period is always lower than it becomes after they are well established; consequently their unit costs are higher. Therefore, the greater the number of changes, the less the average production per man and the higher the costs of the plant as a whole. If then a study of the causes of men's leaving results in more faithful and longer-continued service per man, the cost of the investigation may be saved many times.

A well kept record of the cases of the men who quit is worth its cost because it tends to keep an employer alive to the value of maintaining a good name, because it saves unnecessary office work, and finally because it results in less waste of time and lower costs.

Have you ever gone into this matter? Do you know the proportion of men who leave your service on their own initiative as compared with the total number who leave for all causes? If you find that this group constitutes 80 or 90 per cent. of the whole number, you may discover that some simple act on your part will result in a more permanent body of workmen, increased output per man, and decreased costs.

Don'ts for First-Aid-to-the-Injured Corps

1. Don't fail to attend your first-aid practice. It is for your benefit and that of your fellow workmen.
2. Don't touch a clean wound with dirty hands. You are sure to infect it and cause blood poison.
3. Don't forget that in the absence of a tourniquet pressure will stop hemorrhages.
4. Don't fail to handle a sprain the same as a fracture.
5. Don't explore a punctured wound.
6. Don't tie "granny" knots; they slip.
7. Don't forget arterial blood is bright red and spurts. Venous blood is dark.
8. Don't use tobacco or cobwebs on a wound of any kind for fear of infection.
9. Don't fail to slightly loosen tourniquets at end of one hour; if hemorrhage returns, retighten.
10. Don't retain the dangerous rubber and chain tourniquet longer than 20 min., endeavor to apply a safer tourniquet as quickly as possible.
11. Don't fail to stimulate and apply heat in a condition of shock.
12. Don't attempt to reduce a dislocation. Put parts at rest and send the patient to a doctor.
13. Don't apply a tourniquet too tightly; you may cause death to the part.
14. Don't forget to handle a patient with a fractured spine with the utmost care and gentleness for fear of injuring the cord.
15. Don't handle a simple fracture except with great care; you may make it a compound fracture.
16. Don't delay efforts to restore life.
17. Don't hurry in performing artificial respiration.
18. Don't give up hope of saving the patient's life—work.
19. Don't attempt to place a person suffering from shock in a standing or sitting position.

NOTE—From Susquehanna Coal Co.'s Book of Instructions to Employees.

Equipment and Operation of a New Utah Mine

By W. W. Jones*

SYNOPSIS—The mine is worked on the three-entry plan, the pit cars are weighed by an automatic recording machine, and railroad cars are weighed both before and after loading. Coal dust is burned as fuel under the boilers.

The Standard Coal Co.'s property is located in Carbon County, Utah, approximately six miles west of Helper. This property was developed by Messrs. L. F. Rains and F. A. Sweet, of Salt Lake City, prominent in business and financial circles as well as in coal- and metal-mine operations.

The company began construction work on July 10, 1913, when one mile of standard-gage railroad track was required to connect the tipple site to the branch of the Denver & Rio Grande R.R. to Helper.

The railroad and tipple yards were completed on Sept. 15, 1913; in the meantime work on the double-track gravity tramway was well under way.

The reinforced-concrete retaining wall and tipple were completed on Nov. 3, 1913. Considerable inclement weather was encountered, but notwithstanding these difficulties the first trip of coal was lowered, dumped, screened and loaded into railroad cars on Feb. 10, 1914, just seven months after the first shovelful of earth was turned.

The company is now operating with a capacity over the tipple of 1000 tons, this record having been established on Oct. 28, 1914.

The equipment is modern, uptodate, efficient and economical in operation. The construction is permanent and solid, requiring the minimum of maintenance.

The main features of interest are the geology, mine electric haulage, gravity double-track tram and hoist, automatic mine-car weighing machine, rotary dump, reciprocating screens, rescreening plant, box-car loaders, dust-blower system, the power-house equipment, the reinforced-concrete retaining wall and tipple and the water system.

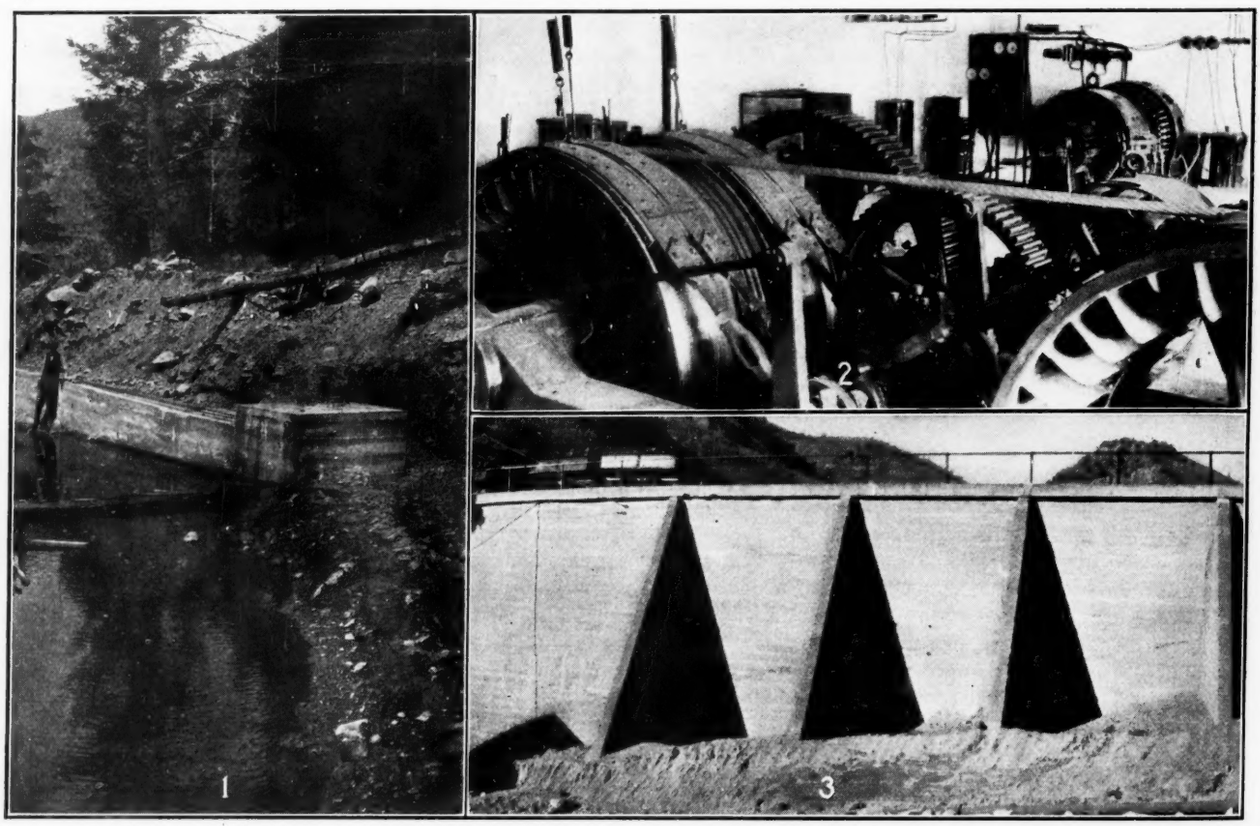


Fig. 1. Intake for One Source of Water-Supply. Fig. 2. Inside of Hoist House, Showing Engine. Fig. 3. Concrete Buttresses on Wing Wall, 30 Ft. High

The coal measures at this point dip 7¼ per cent. to the northeast. There are three workable seams, all having sandstone roofs and floors. The No. 3 bed is the same measure, although with slightly different characteristics, as the Castle Gate seam, and is the one being worked. This bed varies in thickness from 10 to 15 ft., having a parting 4 ft. 2 in. from the floor.

The coal has a pronounced cleavage in parallel and in perpendicular planes about 18 in. apart. This makes it

*Chief engineer, Standard Coal Co., Standardville, Utah.

easy to mine and gives a large percentage of lump. The coal is black and lustrous; it ignites easily and burns freely, giving a clean gray ash devoid of clinker. According to statements made by customers and as shown by steam tests, it has a high calorific value.

The Three-Entry System Is Employed

The mine is developed on the three-entry system, two haulage roads being driven, one either side of the return-air course. This system has many advantages. Separate splits of air are more easily furnished to the butt entries and reduce the chance of an explosion in one portion of the mine being communicated to the rest. The size of the entries may also be reduced without increasing the mine resistance to such a degree as is the case when the double-entry system is used.

The main entries are run on a 3½ per cent. grade against the loads. The butt entries are on a grade of approximately 4 per cent., one side of the mine in favor of the loads and the other side against them. The main entries are on 75-ft. centers; butt entries on 50-ft. centers between air courses. Rooms off the butt entries are on 72-ft. centers.

The mine fan is an 8-ft. Sullivan reversible-hood machine, of 250,000 cu.ft. per min. capacity. It is driven by a 50-hp., 2300-volt polyphase induction motor through a variable-speed drive of the disk-and-roller type.

The main entries are whitewashed. This is an added factor of safety, in that it provides reflecting surfaces for light and makes dust collections on the ribs easily detected so they may be removed.

The main- and butt-entry haulage roads are laid with 40-lb. standard A. S. C. E. rail, all joints having 10-in. twin-cable fishplate bonds, of the channel-pin type. All room turnouts are of standard 40-lb. rail, switches and frogs.

The locomotives are three in number; two are 7½-ton Baldwin-Westinghouse bar-steel frame gathering-reel type, with one 15-ton haulage machine.

These locomotives are giving excellent service with but little attention or repairs. They operate on a 250-volt overhead trolley system. All of the butt-entry trolley circuits are connected to the main-haulage circuits through automatic switches.

The main-haulage circuits are sectionalized by all-metal under-run switches. All of the haulage roads are illuminated by 40-watt tungsten lamps operated on 110-volt a.c. independent circuits.

The hoist house is located directly over the portal to the mine, the floor and main entrance being of reinforced-concrete construction. In the building are located the hoist and a 200-kw. synchronous motor-generator set, which converts the 2300-volt alternating current to 250-volt direct current for trolley service in the mine. Directly in line with the tramway and over the portal of the mine is the double-drum hoisting engine, with axles mounted in a horizontal plane. The friction for holding the rope during an unbalanced pull is obtained by three wraps around each drum.

Four sets of brake bands, two for each drum, control the speed of hoisting. In case of equal loads on each end of the cable, the hoist can be driven through a friction band

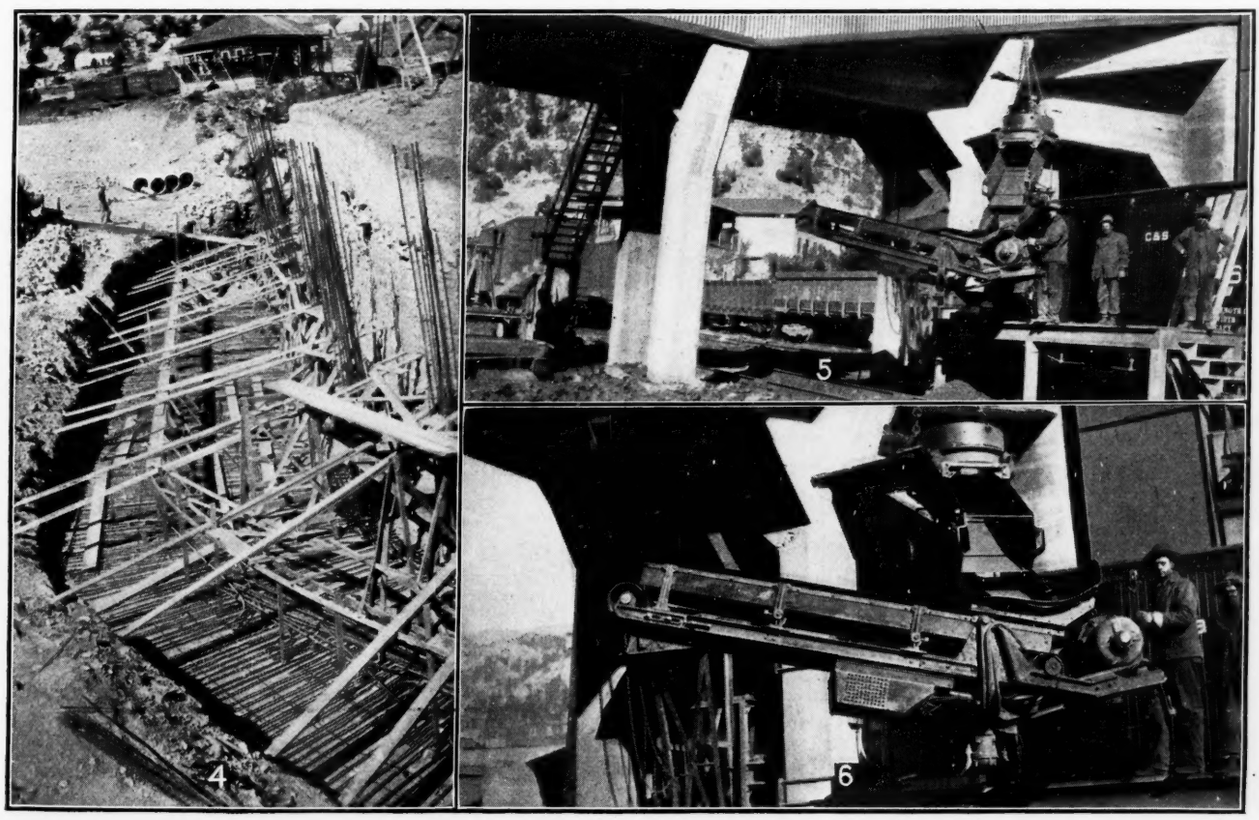


Fig. 4. Footing for Retaining Wall, Showing Steel Reinforcing in Place. Fig. 5. Box-Car Loader for Egg and Stove Coal. Fig. 6. A Closer View of the Manierre Loader

FIG. 7. LOOKING DOWN THE TRAMLINE FROM ABOVE THE HOIST HOUSE. CENTER TRACK IS USED FOR EMPTY CARS ONLY. FIG. 8. SHOWING METHOD OF SETTING FORMS AND BRACING. THE FORMS IN THE FOREGROUND ARE DESIGNED TO SUPPORT THE RECIPROCATING SCREENS. FIG. 9. GENERAL VIEW OF SURFACE PLANT, SHOWING POWER HOUSE AND TIPPLE. THIS VIEW SHOWS RESULTS OF PROPER FIRING WITH AMERICAN STOKERS AND FORCED DRAFT

clutch and gears by a 150-hp. 2300-volt variable-speed polyphase induction motor. Under normal conditions the hoisting is done by gravity. The loads going down the incline to the tipple pull the empties up to the mine. The hoisting engine was built by the Denver Engineering Works.

The greatest obstacle overcome in the construction work was the building of the 4300-ft. double-track tramline. A straight road with one break in grade from a 12.4 per cent. to a 7.1 per cent. inclination connects the mine to the tipple. Large cliffs 60 to 100 ft. high were torn down to fill the cañon and build the grade.

The excavation at the lower end of the line was made by a steam shovel. The upper end was mostly solid rock and was blasted and hauled away by teams to make the fills. Approximately 100,000 cu.yd. of material was removed in construction of the grade. The roadbed is 18 ft. wide with side slopes of 1½ to 1. The tracks are of 40-lb. standard-section rails laid on a 42-in. gage. The tramway rope is 4500 ft. long and 1⅛ in. in diameter, made of the best materials obtainable. It was furnished by the Leschens & Sons Co.

Manganese steel rollers with Hyatt spiral-roller bearings are set in the center of each of the tracks to support the rope. These rollers were furnished by the Silver Bros. Iron Works and the American Manganese Steel Co.

The rope and tramway were designed for 16-car trips to travel the distance from the mine to the tipple in 4 min. At present 12- to 14-car trips are run in approximately 6 min. The ultimate capacity of the incline is 500 tons per hour. At the upper end there are three tracks, the center one for incoming empty trips and the outside tracks for loaded trips. All of the switches on the tramway are automatic and require no attention during operation.

THE WEIGHING AND DUMPING APPARATUS

When the cars are detached from the rope on the tipple bridge they pass over an automatic recording Streeter-Amet weighing machine which accurately weighs them, thus eliminating the necessity of a weighman and checkweighman.

As the cars leave the scales they run into a rotary dump. In this is incorporated the theory of rolling the coal out of the car rather than dropping it. The dump is driven by a constant-speed, 7½-hp., 220-volt polyphase induction motor. The receiving bins are circular and set close to the car as it is dumped, thus insuring a minimum of breakage to the coal. The feed table under this dump is run by a 15-hp. induction motor.

The reciprocating screens are of special design, having an extreme width of 8 ft., making an excellent screening area. They are driven by a 50-hp., 2300-volt induction motor. These screens are in two units, the first set having a double deck and the second a single deck. The second set is used for California lump only.

All of the coal-separating machinery was furnished by the Link-Belt Co. The rotary dump and the coal-separating machinery are inclosed in a structural steel housing furnished by the American Bridge Co.

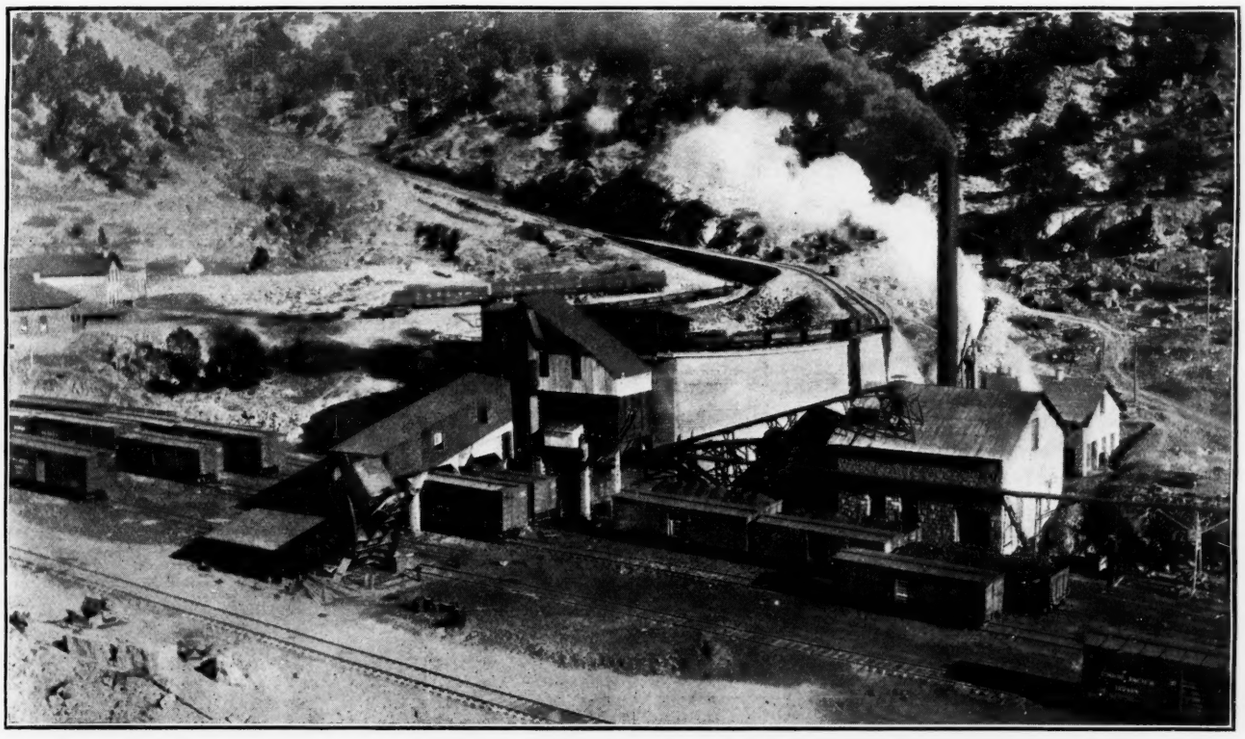


FIG. 10. IN THIS VIEW WE MAY SEE THE RESULTS OF IMPROPER FIRING AND RUNNING NONCONDENSING. THE PIPE LINE RUNNING TO TOP OF BOILER HOUSE IS FOR BLOWING DUST FROM RESCREENING PLANT TO BUNKERS ABOVE BOILERS

The slack coal from the upper deck of screens is collected in a hopper with the chute leading to an 18-in. elevator, which takes the coal to a rotary screen. The elevator is driven by a 20-hp. induction motor.

The revolving screen, which is likewise driven by a 7½-hp. induction motor, is set over an 80-ton steel dust bin. The screened slack from the rotary screen is stored in a steel bin of 50 tons' capacity.

The box-car loader for lump coal or run-of-mine takes any size of the ordinary railroad car and tips it to such a slope from the horizontal that the coal will readily roll down and fill up the end of the car. As the end of the car fills, the loader tilts back until it is horizontal; then slowly, as the car fills, it reaches the maximum inclination in the opposite direction when the car is loaded. This loader gives excellent service in that it does not break the large lumps of coal.

The tilting device is driven through a Morse silent chain by a 75-hp., 2300-volt, phase-wound induction motor. The auxiliary device for operating the clutches that hold the car on the loader is driven by a 20-hp., phase-wound, 220-volt motor. After the car is tilted on end it is held in that position by an air brake. The air is furnished by a 1-hp. motor-driven air compressor. The loader was furnished by the Ottumwa Box Car Loader Co.

The egg and stove coal is loaded by a Manierre box-car loader. This is a belt conveyor mounted on two arms hinged from a supporting column of the tipple. It is moved easily by hand as all the pivots are ball bearing. This loader is driven by a 10-hp., 220-volt, phase-wound motor; the belt is 24 in. wide, with a capacity of six tons per minute, and travels at the rate of 100 ft. per min.

COAL DUST IS BURNED AS FUEL

In the dust bin is a screw conveyor driven by a 5-hp., 220-volt induction motor through a Reeves variable-speed transmission. This conveyor ends in a 16-in. galvanized iron pipe through which air is traveling at the rate of 8000 ft. per min. This air current is produced by a 53-in. Sirocco pressure blower, driven by a 125-hp., 2300-volt induction motor. The blower handles approximately 13 cu.ft. of air per pound of coal, or about 25 tons per hour. The portion of the dust required for firing the boilers is conveyed by an auxiliary pipe line to a dust collector, over the steel coal bunkers, where the velocity is so reduced that the coal falls through the bottom and is carried by chutes to the bunkers. The blower was furnished by the Utah Engineering Co.

The boiler plant consists of two 200-hp. Stirling water-tube boilers fired by two American stokers to each boiler. Steam is carried at 150 lb. gage pressure. The building is of native sandstone, 34x40 ft. and 22 ft. high, with a corrugated sheet-iron roof supported on steel trusses and channel purlins.

Forced draft for the stokers is supplied by a steam-engine-driven fan, which also drives the stokers. As the steam varies in pressure the engine automatically changes its speed as required.

The ash pit is underneath the boilers, where a small car is provided to receive the ashes. This car runs on a ½ per cent. down grade to the ash dump.

Power is generated by a 2300-volt, 375-kv.-a. Westinghouse turbo-alternator. The turbine is of the impulse type, having only one set of blades. A barometric condenser has just been installed which gives 22 in. of vacuum, which corresponds closely to the altitude at this

place. The circulating water for the condenser is forced through eight special spray-cooling nozzles by a 30-hp. direct-connected centrifugal pump and falls into a concrete pond, whence it again flows by gravity to the condenser.

A two-panel switchboard with all of the necessary instruments controls the distribution of power. All of the switches are operated by remote mechanical control and are mounted on the wall together with all of the instrument transformers.

Westinghouse electrolytic lightning arresters take care of all of the disturbances from the elements. The entire electrical equipment was furnished by the Westinghouse Electric & Manufacturing Co. through its Salt Lake representatives.

The water for sprinkling the mine is conducted by gravity through four miles of pipe line and stored in a 50,000-gal. wood-stave tank, situated 120 ft. above the portal of the mine. The entire mine is piped so that water is available for sprinkling and drinking purposes in each of the rooms and entries.

Water for the town and for the operation of the power house is supplied from springs 3½ miles up the cañon. The springs are all concreted in, so that the water has little chance of being contaminated. There are three sets

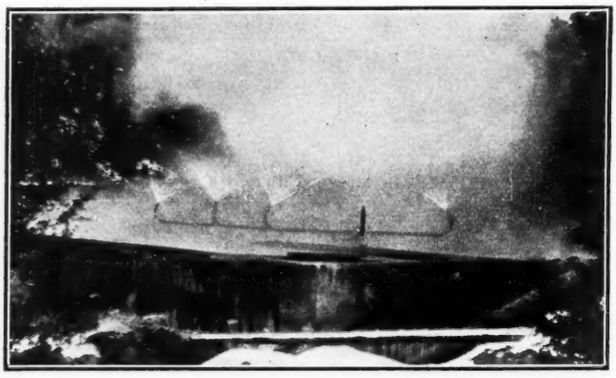


FIG. 11. SPRAY NOZZLES IN COOLING POND

of pipe lines from the three springs to the town, thus affording a constant supply.

The upper spring is 124 ft. above the storage tank at the mine and gives a static pressure of 285 lb. at the town if desired. The two lower springs will produce a pressure of 170 lb. at the town. The two pipe lines from the lower springs are connected to a 50,000-gal. wood-stave tank situated so as to give a pressure of 70 lb. for the town hydrants. In the complete system there are over 11½ miles of pipe. All of these systems are interconnected through valves that can be used for emergency.

TIPPLE AND YARDS

The reinforced-concrete retaining wall, which is a part of the tipple structure, is 480 ft. long. In plan it is pear-shaped, with a height varying from 10 to 46 ft. The maximum height is next to the tipple structure.

The wall is 19 in. thick at the base and 10 in. at the top and is set on reinforced-concrete footings. On the outside the wall has a batter of ½ in. to the foot. Throughout its length there are reinforced-concrete buttresses spaced approximately every 12 ft., the spacing depending on the height of the wall. The steel was furnished by Ryersons & Sons Co., of Chicago. Lyman & Samuels, of Salt Lake City, contracted the erecting of the forms and placing of the steel and concrete under the direction of D. H. Blossom, of Salt Lake City. The proportion in the aggregate was: 1 part cement, 2½ parts sand, 2½ parts gravel.

The tipple yards and railroad yards leading to them were excavated by a steam shovel and construction train. They are approximately 1000 ft. long by 150 ft. wide on a 2 per cent. grade. All of the rails are standard 75-lb. set on 8-in. tie-plated ties.

The empty cars are taken past the tipple on a passing track and are stored in the upper part of the yards above the scales. The storage capacity accommodates 40 cars at present. From these storage tracks the empty cars pass over a Fairbanks-Morse 150-ton full-suspension concrete-and-steel-set scales, where they are weighed and then distributed onto the four tracks leading to the tipple. Between the scales and the tipple there is storage space for 18 cars, together with one car under the chutes on each of the tracks.

As the cars are loaded they are dropped by gravity over a similar set of scales below the tipple and reweighed, then dropped onto two makeup tracks ready for the train. Below the tipple there is storage for 19 loads and on the makeup tracks there is storage for 29 cars.

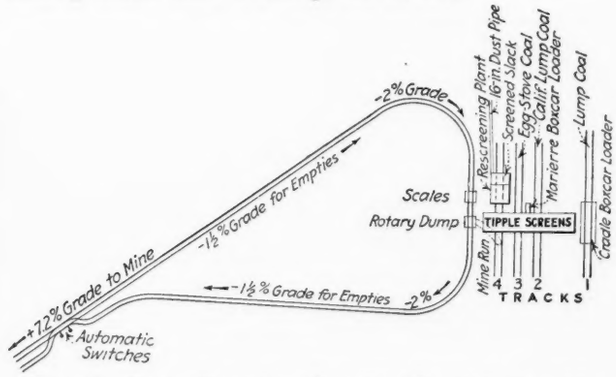


FIG. 12. PLAN SHOWING GENERAL LAYOUT OF THE SURFACE PLANT

At present all of the employees are living in tents. There are an office building, a meat market, store and hotel, all of metal lath and pebble-dash construction. The meat market is equipped with a 10-ton refrigerating plant driven by a 15-hp. induction motor.

A mine-rescue and first-aid corps is organized and provided with a full equipment of first-aid supplies.

Fatalities at Coal Mines during 1914

BY ALBERT H. FAY*

It is gratifying to note that the fatalities in coal mines in the United States in 1914 were 334 less than during the preceding year, the total fatalities being 2451 as compared with 2785 for 1913.

The principal causes of accidents showing a material decrease are: Coal-dust explosions, 96 per cent.; haulage, 11 per cent.; and falls of roof and pillar coal, 10.6 per cent. The net decrease in underground fatalities was 365, or 14 per cent. This is equivalent to one life every day during the year.

*Mining engineer of the U. S. Bureau of Mines.

There were 331 fatalities due to gas explosions as compared with 91 in 1913, making a net increase of 240. Of the total gas-explosion fatalities, 261 were due to four serious explosions. There were slight increases in accidents due to explosions and electricity.

There was also a net increase of 26 fatalities in shaft accidents, or 42 per cent.; while on the surface, the net increase was five, or about 3 per cent. The net decrease for the year for both underground and surface accidents at coal mines as compared with 1913 was 12 per cent.

Fatalities per Thousand Employed

The exact figures for the number of men employed are not yet available, but taking the estimates as furnished by the inspectors for part of the states and using the same number of men as employed in 1913 for the other states, gives an estimated total number of employees for the year of 742,868 as compared with 747,644 in 1913.

The fatality rate, therefore, becomes 3.30 per 1000 men employed in 1914 as compared with 3.73 in 1913. Excluding 1912, when the rate was 3.27 per 1000 men employed, the 1914 rate of 3.30 per 1000 is lower than any year since 1903.

Greater Reduction in Loss of Life Than in Tonnage

While there was a reduction of 12 per cent. in the number of fatalities, there was also a reduction of 10.5 per cent. in the production of coal. The United States Geological Survey estimates the production for 1914 as 510,000,000 short tons as compared with 570,048,125 tons for 1913. The fatality rate per 1,000,000 tons of coal produced in 1913 was 4.89 and in 1914, 4.81. With the exception of 1912, when this rate was 4.41, the 1914 rate is the lowest yet recorded for the United States. The amount of coal produced per fatality in 1914 was 208,078 short tons, which with the exception of 1912 is the largest on record. The production per fatality in 1913 was 204,685 tons, which compares with 226,469 tons in 1912 and 144,325 tons in 1907.

There were 316 lives lost in disasters in which more than five men were killed at one time as compared with 464 in 1913, a net reduction of 148, or 32 per cent., in this class of accidents.

It is not possible to attribute these lower rates to any one particular influence. They may, however, be assigned in part to any one of the following agencies or to a combination of all of them: Closer and more careful inspection by the state inspectors; better enforcement of laws and regulations by the operators; a realization of the dangers attendant upon the miner in his daily work and his efforts to reduce accidents due to the educational campaign conducted in his behalf; the extended use of safety lamps in doubtful mines; the use of permissible explosives; humidifying dusty mines; first-aid and rescue training which saves lives that might otherwise be lost by reason of injuries received; the enactment of industrial-accident compensation laws; and last but not least the spirit of cooperation on the part of all concerned.

I AM *a Menace to Them All.*

Moloch

Written Expressly for COAL AGE

By Berton Braley

WOULD *Bring My Power All to Naught.*

I AM Death's helper, for I slay
My thousands ruthlessly each day,
And all along my trail you find
Those I have crippled and made blind,
And children wailing piteously
Who starve and want because of me.

THE miner with his pick and drill
Who does his work with easy skill,
The trapper at his swinging door
Who whistles as he does his chore,
The old and young, the great and small
I am a menace to them all.

MY boast it is to kill or mar
Almost as many men as war,
And wise men know me and beware
But fools defy me and declare
They have no fear of such as I
And so they go their ways—and die!

IN mine and breaker, hoist and shop,
I reap my monstrous human crop,
And thus to meet that sacrifice
Mankind must pay a fearful price;
And yet a little patient thought
Would bring my power all to naught.

MAN *makes me—he can end me, too, and end the evil that I do,*
The pain—the sorrow—the distress, for lo, my name is CARELESSNESS!

Longwall Conveyor and Loader for Thin Seams

By James Dickson*

SYNOPSIS—A sectional coal conveyor and loader that is moved forward following the face. The results obtained by its use have been quite satisfactory and the cost of production has been reduced.

In reference to inquiry by John Harvey concerning "Loading Coal by Machinery at the Face" (Coal Age, Dec. 5, p. 920), I venture to give a brief description of a longwall conveyor and loader that is suitable for thin coal beds.

This conveyor is easily fitted up, is simple in operation and gives good results, both in the matter of output and in keeping down expenses.

It was first tried in a seam where the coal varied in thickness from 20 to 24 in., both roof and floor being of shale, which was generally fairly hard. The bed was worked on the longwall system, with roadways at 30-ft. centers, 3 ft. of rock being taken out in the branch roads, and from 4 ft. to 5 ft. in the main roads, to make sufficient height for the cars and horses. Packwalls were built along both sides of the roads with the rock, but there was generally a surplus of the material which had to be loaded out and sent to the surface, or else used for stowing purposes in some other part of the mine.

The cost of working the thin coal, together with the expense due to the large amount of rock-work necessary to make and maintain the roadways, became so great that the management was compelled to look for some other system that would give better results; and, as usual, necessity was called upon to mother still another invention, as follows:

The section first tried had 11 places on a straight face fully 300 ft. long, the main road being in the center. This main road, and those on the extreme right and left of the section, were the only ones kept in use after the conveyor was installed. The end roads were carried on as before, but in the main road all the necessary rock to make the required height was removed from the floor, this being taken up for about 10 ft. of width, or sufficient to permit double track being laid to the face. The two end roads were connected to the main road by two diagonal passages, as shown in Fig. 1, these end roads serving only as airways and ropeways and also as emergency exits in case of a cave taking place along the face.

The Construction of the Conveyor

The conveyor itself was built in 6-ft. sections, each section being of ¼-in. plate, 6 ft. long and 3 ft. wide, having on the edge nearest the gob a 9-in. side, and on that nearest the coal no side at all. Each section was mounted on two T-irons, which strengthened it, and also served as skids. The sections were coupled closely together, the junction being underneath the plates and only one center coupling being used.

When fitted together ready for use, the whole conveyor should be just a few feet less than half the total length of the face, the section at each end being carefully rounded off, so as to clear any obstruction that it may come against.

The timbering must be done systematically and kept in a straight line, in order that a clear passageway may be left through which the conveyor may pass. The posts were set about 4 ft. apart, as this was found to leave ample room for the conveyor to pass easily.

The roof support was augmented by two rows of hardwood cogs between the conveyor and the gob. These were generally built on a small pile of loose dirt to facilitate their withdrawal, as all this cog timber was recovered and used many times over. As soon as the conveyor was moved closer to the face, a new row of cogs was built, and the row farthest back taken out and the roof permitted to cave. The miners were each given about 20 ft. of face to work on, the fireboss measuring the distance and keeping a chalk line on the roof so that each man had to do his share, or his part of the wall tended to fall behind.

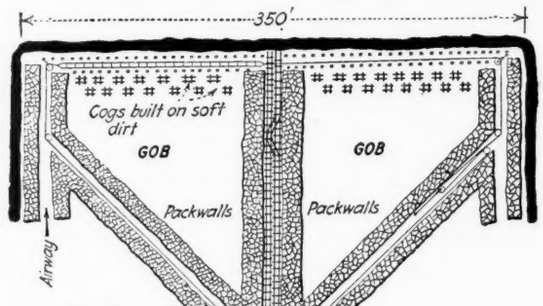


Fig. 1. Plan Showing General Scheme of Development

When in actual operation, the conveyor was drawn up until one end was close to the wheel on the end road, and the miners on that side of the section were given 3 min. in which to load their coal. Each section of the conveyor carries easily from 300 lb. to 500 lb., so that if there are 20 sections, or thereabouts, there will be from 3 to 4 tons on the conveyor. When ready to move, the man in charge signals the motorman to go ahead (see motors, drum and rope connections, Fig. 1).

The tracks on the main road are laid right up to the coal, so that a light trestle bridge is built across the tracks to carry the conveyor, the cars to be loaded standing under this trestle. When the first section of the conveyor reaches the part of the trestle immediately over the empty cars, the man in charge drops a small sheet of iron onto the bedplate of the conveyor, and this sheet being set at an angle of 45 deg. to the line of travel, the coal on coming against it is pushed over the side of the conveyor into the waiting cars—a car on each track being loaded alternately, so that while loading on one track the cars on the other are being changed.

*Vancouver-Nanaimo Mining Co., Nanaimo, B. C.

The speed of the conveyor is low, in order to give sufficient time to change the cars, and also to keep down any excessive noise. Three minutes is allowed for the conveyor to travel from one side to the other, so that the speed is about 50 ft. per min. The switches on the main road require to be kept as close as possible to the face, in order that no time be lost in changing the cars.

As shown above, the conveyor can easily and safely make a trip in 6 min., discharging in that time, say 4 tons of coal, or at the rate of 320 tons per day of 8 hr. The capacity of the conveyor, of course, is changeable with the height available, and at 2 ft. 8 in., as stated in the query, there is plenty of room for variations to suit any individual case. The miners can be paid by the day, by the yard of advance or by the ton on the total output. The last method, in my opinion, is the best.

The timber and any surplus rock left after building the packwalls can be taken to any desired place along the face, this being done by the afternoon or night shift.

Supposing that in the case under discussion the actual output was ¾ of the output calculated above, or 240 tons, this would be equivalent to a daily advance of about 8 ft. on a 350-ft. face, so that the conveyor would require moving ahead almost every night. This moving is done by four men in two hours if the timbering near the face has been put up to suit the conveyor. This is a point that requires constant attention from the fireboss or man in charge.

The Conveyor May Be Easily Moved

The actual changing is simple, the conveyor being drawn to one end of the run and the haulage rope detached from the end nearest the main road. The wheel at the corner of the section is advanced to its new position and the end of the rope carried down the new line on which the conveyor is to run. The conveyor is then guided easily into its new position, there being sufficient flexibility in the couplings to take the slight curve involved the other end being then changed.

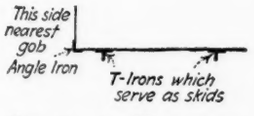


Fig. 2. An Enlarged Section of the Conveyor

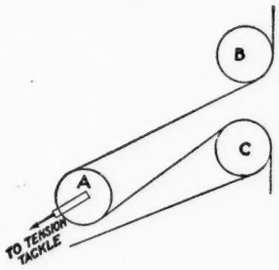


Fig. 3. Plan for Extending the Haulage Rope

Fig. 2 shows an enlarged section of the conveyor, and Fig. 3 an enlarged plan of the system for extending the haulage rope when the conveyor is moved forward, the rope from wheel *B* going to the conveyor, while that from wheel *C* goes to the motor. Wheel *A* is an idler held in tension by block and tackle, there being enough rope between it and the other two to serve for several weeks without splicing any new rope onto it.

The result of this conveyor was an increased output, the number of roadways was reduced from 11 to 3, with a corresponding decrease in expense, the handling of the cars was concentrated, requiring fewer pushers and drivers, and the roof was much better due to the rapid advance of the face. Above all, that which was sought was gained, namely, cheaper coal.

I may say that this system works equally well whether the coal is hand- or machine-mined.

I trust this may prove of interest to readers of your paper, and hope to see other systems of coal conveying described therein.

The Griffith Mine Pillar

William Griffith, of Scranton, Penn., some time ago patented a mine pillar made by the shooting down of "top" rock. This was described in our issue of Jan. 20, 1912, under the title, "Permanent Roof Sustention." Recently he has suggested another form of support, which has been tested at the laboratory of the Delaware, Lackawanna & Western R.R. Co. at Scranton. It has also been tested at Pittsburgh, at the testing plant of the Bureaus of Mines and of Standards.

At present, Mr. Griffith has not revealed precisely the character of the pillars, but it may be said that they are formed mainly of concrete reinforced in a peculiar manner with wood. The wood should be creosoted and the pillar coated with cement placed in position by the cement gun. They all contain rock as blasted roughly from the roof. The experiments are said to show that, after 30 days has been allowed for the cement to set, the Griffith pillar will settle only 3 per cent. when loaded with 80 to 90 times as much weight as a timber-and-rock cog of the same size undergoing a similar settlement. From 25 to 40 times as much weight is needed to reduce the vertical height of a Griffith pillar 5 per cent. as to settle a timber-and-wood cog by that percentage. Even when the settlement reaches 10 per cent., the Griffith pillar is still found 15 to 20 times as strong as the old timber-and-rock cog. Nor, according to report, does it crumble to dust, as does concrete, when tested to the limit. Its failure is slow and would give time and abundant warning to men to escape in case of such failure. Moreover, when tested to its limit it is found twice or three times as strong and three times as elastic as a concrete pillar.

Placed in a 4-ft. coal seam, a pillar 4 ft. square with timbers 4 in. square would support 100 ft. of overburden for an area 21 ft. square. Spaced 20 ft. apart such pillars would support the roof with only 5 in. of permissible settlement, provided the floor was sufficiently unyielding. The pillars will support 224 tons to the square foot of cross-sectional area.

Among the persons present at the test were: Alex Bryden, consulting engineer of the Pennsylvania Coal Co.; S. D. Dimmick, superintendent, Peoples Coal Co.; Eli T. Conner, consulting engineer; Geo. Engle, mining engineer, Temple Coal Co.; H. J. Force, engineer of tests, of the Delaware, Lackawanna & Western R.R. Co., coal-mining department; Arthur Long, engineer, Scranton Mine Cave Bureau and William Schunk, Scranton city engineer.

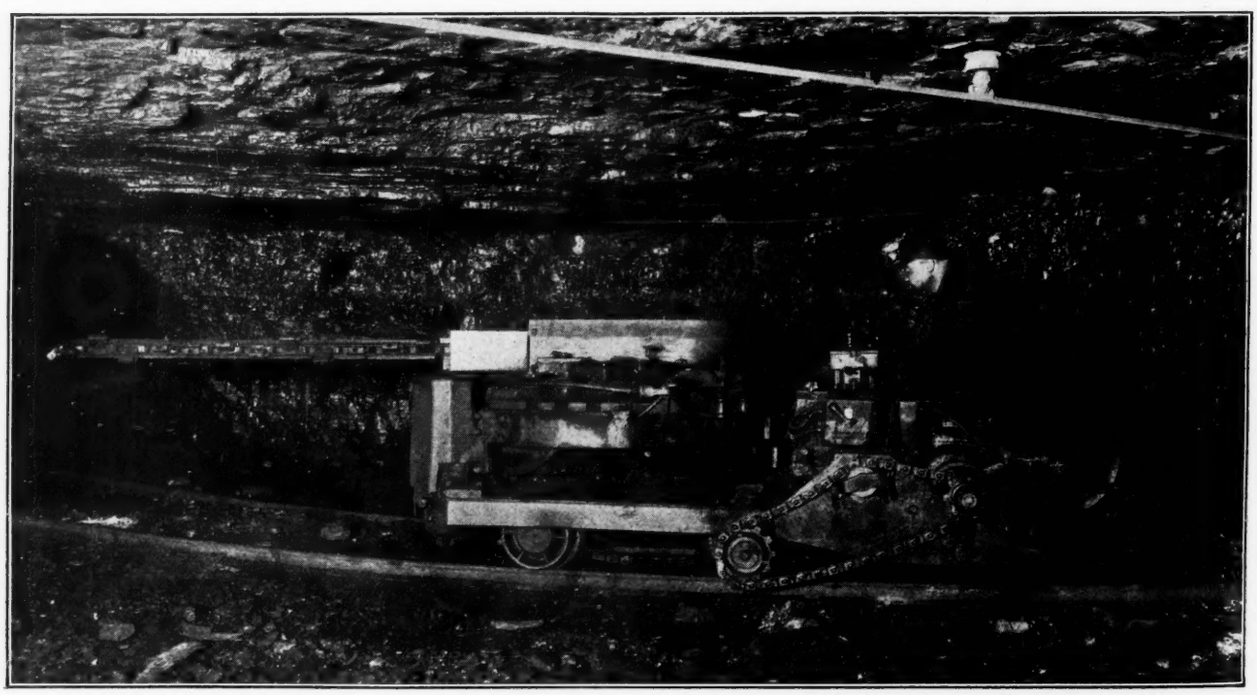
The Current-Carrying Capacity of an Electric Conductor is limited both by the allowable temperature rise and the allowable drop of potential. The potential difference required to transmit a given electric current through a conductor will vary directly as the resistance of the conductor, and, inversely, as its cross-sectional area. The diameter of conductors used for long-distance transmission is usually determined by the drop of potential allowable rather than other electrical considerations.

Working with a New Type of Coal Cutter

By John G. Bart*

SYNOPSIS—Results obtained with a machine that cuts an 8-in. kerf in the bone parting of a 6-ft. seam of bituminous coal. The coal is obtained in better shape, that is, larger lumps, and the entire product is cleaner than before. Lighter shooting, which results, also insures a better top, thus improving safety and cost.

Because of numerous requests from men in the coal-mining industry for information relative to the use of a new type of mining machine which has been in operation under my supervision for a period of about six months, and for coal men in general who are interested in progressive methods of mining, this article is presented. I particularly invite comment and discussion of the subject.



Transporting the Cutter to Another Room

The mining machine in question has been given locally the name of "bony machine," on account of the fact that the original purpose of the machine was to cut a kerf in the bone coal which occurs in the Twin Freeport seam, thereby eliminating the loading of this bone coal with the clean coal. This bone forms a stratum varying in thickness from 5 in. to 7 in. and occurs approximately 3 ft. from the bottom. The good coal above the bone varies in thickness from 2 ft. to 4 ft., making the total thickness of the seam from 5 ft. 6 in. to 7 ft.

The system of mining in use is the room-and-pillar panel system, each panel consisting of 22 rooms on 40-ft. centers driven to a depth of 250 ft. The mine is equipped throughout with electrical machinery, including gathering locomotives and electrical chain machines. The type of mining machine in regular use is the shortwall or continuous cutting machine which undercuts the coal to a depth of 6 ft. with a 5-in. kerf in the bottom part of the seam. This cut leaves several inches of good coal at the bottom, which is done to avoid the possibility of cutting in the fireclay, and thereby depreciating the value of the coal. Under this system it is extremely difficult to regulate the thickness of bottom coal left by the machine; this coal, however, is entirely lost, thereby decreasing the percentage of recovery from the seam.

The Bone Parting Raises Difficulties

With reference to the shooting of the coal after it is undercut at the bottom, it will be readily understood by mining men that the 5 in. to 7 in. of bone coal makes it extremely difficult to shoot without the use of excessive amounts of powder. The system of shooting consists of placing one hole 6 in. above the bone coal in the center of the working place to break down the center. After cleaning up this shot, a shot is placed in each corner, bringing down the bone coal and the clean coal, thoroughly mixed and difficult to separate. This results in some of the bone coal being loaded with the clean coal, and in narrow work the hard shooting practically pulverizes the coal.

Consideration of these points, and some others which will be mentioned later, led me to investigate a mining machine for cutting a kerf in the bone coal, which resulted in a trial installation of the machine known as the "Arewall" or turret machine, and which, as before stated, is

*General superintendent, Bessemer Coal & Coke Co., Russellton, Penn.

known locally as the "bony machine." This machine is shown in the accompanying photographs, also on the front cover, and consists essentially of a motor-propelled truck on which is mounted a turret capable of being raised and lowered by power. In this turret is a mounted revolving cutter-bar measuring 10 ft. from center of drive sprocket to center of idler sprocket.

The machine was originally installed in entry work with a maximum depth of undercut of 7 ft. and a kerf of 5 in. The entries are driven from 10 to 12 ft. in width.

How the Coal Was Shot

The plan employed in shooting the coal after the initial cut was to place a shot in either the right- or left-hand corner of the top coal, which resulted in breaking it down at the back of the cut and required pick work to bring it down at the front of the cut. After loading this out, the second shot was placed in the opposite corner, and this shot having a loose end gave a large proportion of lump coal. After the top coal was loaded, the third shot was placed in either the right- or left-hand corner of the bottom coal, and the coal from this shot was loaded out before shooting the fourth and last hole in the opposite corner of the bottom coal. This last shot gave an excellent grade of lump coal.

The first experimental work with the machine led to a consideration of cutting a wider kerf and it was decided to change from a 5-in. kerf to an 8-in. kerf for the following reasons:

1. The bone coal that was left on either the top coal or the bottom coal made it more difficult to shoot the tight shot.
2. The 5-in. kerf was not wide enough to permit the proper bringing down of the top coal with a 7-ft. undercut.
3. The bone coal remaining after the 5-in. kerf mixed with the coal and required cleaning.

In adopting the 8-in. kerf, we practically eliminated the above mentioned troubles, as this kerf left practically no bone coal and the wide kerf was an additional advantage in bringing down the top coal. It eliminated also the trouble mentioned above, with the tight shot in the top coal, by bringing down the front of the cut.

Quality of Coal Is Improved

The important point which I wish to emphasize is the quality of the coal produced by cutting out any foreign matter which may exist in a seam 5 ft. or more in thickness. This is true not only because the impurities are eliminated, but also because of the better grade of lump resulting from shooting the coal in two benches with four shots, in comparison with shooting the full thickness of the seam with three shots. Another advantage of this method concerns both the safety and cost of mining in that the light shooting required for the top coal has no effect on the roof.

For the benefit of those wanting to know the character of the results obtained with this machine during the regular operation of same, the following points are brought out: The "bony" cutter requires less manual labor than the shortwall type of machine, as the former runs directly to its working position on a track laid with steel rails and steel ties and is almost immediately in position for making the sumping cut, which is made by pulling the machine to the place by a wire rope anchored in the face. This operation requires from 4 to 5 minutes.

Operation of the Machine

The wire rope is then removed from the anchor and attached to a lug on the machine for the purpose of revolving the turret, and two jack pipes are placed against the ribs as shown in the front-cover photograph. The machine is then ready to make the cut across the face, which requires from 10 to 12 min. When the cut has reached the required width, the turret is locked in position and the machine is pulled back on the rails by the self-propelling mechanism and is ready to move to another working place.

The power required during the operation of the "bony machine" at no time exceeds the power required for operating the shortwall type of machine when cutting in clean coal. It is evident that the time required between the finishing of one place and being ready to sump in another place is considerably less with the "bony machine," on account of its being integral with the truck and requiring no loading and unloading.

Sumping the Machine

With reference to repairs on machines, my experience up to the present time based on a comparison of the mechanism of many cutters would indicate that the cost of maintenance will be considerably less than the shortwall and breast types of machine.

A Good Hoisting Record

The New Staunton Coal Co.'s mine at Livingston, Ill., produced 102,115.15 tons of coal during December, 1914, working 22.4 eight-hour days, making an average of 4538 tons per day. For the month of January, 1915, it did equally as well, making an average of 4537 tons daily. From July 1, 1914, to Jan. 31, 1915, it averaged 4515 tons per day. The largest output for one day was on Nov. 4, 1914, when 4826 tons were hoisted, making 1658 hoists, or an average of 10 tons per min.

Buy It Now

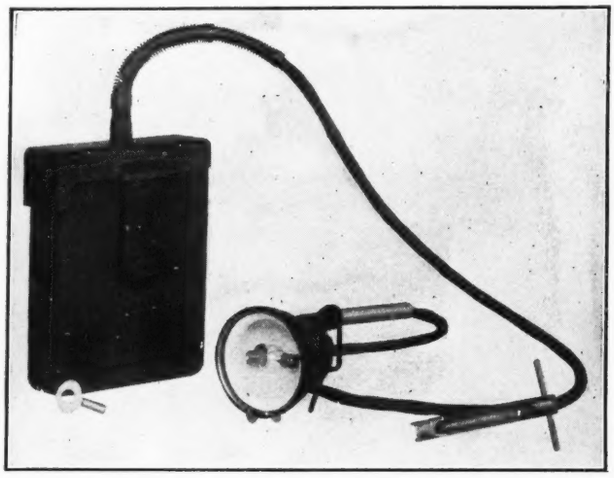
Get now what you need in the spring and help pass prosperity along. Don't buy what you don't need, but buy now what you do need. It will put thousands of idle men at work who are suffering this winter.

A New Miners' Electric Lamp

SYNOPSIS—The new lamp of the General Electric Co. is guaranteed to burn more than 10 hours per charge after one year's service. It distributes light through an angle of 130 degrees. It weighs only 3¾ pounds.

The General Electric Co. is offering a new miners' electric lamp that is safe to use, of strong construction yet light in weight, simple in design, foolproof, efficient in operation and of ample guaranteed capacity. The outfit consists essentially of a lead-plate battery, carried on the belt; a ¾-cp. Mazda lamp with a suitable reflector held in a steel shell carried on the cap. A strong, serviceable cable connects the battery and the lamp.

That an electric lamp would be safe to use in coal mines has long been recognized, because it could be made so



NEW GENERAL ELECTRIC MINERS' LAMP

that it would not ignite inflammable gases and would produce a uniform light regardless of atmospheric conditions. While the carbon-filament lamp represented the best available electric illuminant, such a miners' lamp was not possible because of the relative inefficiency of the lamp; for storage batteries of the required capacity could not be designed within permissible weight and dimension limits. The perfection of the efficient Mazda lamp in miniature sizes by the General Electric Co. and the development of small, efficient, light-weight storage batteries have resulted in the design of this type of miners' electric lamp.

The prime feature of this lamp is that it has been made thoroughly safe to use. By adequate insulation of the entire circuit, placing all the terminals and contacts inside of locked and sealed steel cases and providing automatic means for extinguishing instantly the glow of the filament, should breakage of the lamp bulb expose it to the air, this lamp, built of high-grade materials, has been made both safe and rugged.

LAMP WILL BURN 12 HOURS

The outfit complete weighs but 3¾ lb., of which 3½ lb. are carried on the belt and 4 oz. on the cap. The battery is rated at 7.2 amp.-hr. Normally it will light the lamp 12 hr. per charge and can be relied on to furnish light at least 10¾ hr. per charge at the end of one year's service. The ¾-cp. Mazda lamp operates at 1.9 volts and the reflector distributes the light evenly through a solid angle of about 130 deg.

The battery is nonspilling and the terminals are not subject to acid corrosion. The case is of medium-hard rubber. Exide plates are used. The battery box measures 6¼ in. high by 5 in. wide by 2 in. thick overall. It is made of drawn sheet steel, electrically welded, including the two side straps for the miner's belt. After welding, the box is lead plated and painted with acid-proof paint. The cover is drawn steel, hinged at one end and fitted with a substantial lock at the other end. The terminal contact block is riveted to the inside of the cover. Connection to the battery terminals is made by strong spring contacts, arranged to close the circuit when the cover is shut. The cable entrance bushing is watertight and clamps the cable firmly to prevent strain on the terminals.

SOME DETAILS OF CONSTRUCTION

The lamp bulb, reflector and terminal contact block are incased in a light, strong, drawn-steel shell, which is copper oxidized, enameled and provided with a hook for attaching to the miner's cap. The entrance bushing leads the cable through the back of the shell where it is reinforced by a steel plate. On the terminal contact block, which is waterproof and screwed to the protecting shell, are mounted suitable terminals for cable connections and the spring contacts which hold the lamp bulb. The contacts are nickel plated. The reflector is of drawn steel, white porcelain enameled. A rubber gasket between this and the glass renders the case waterproof. The glass is held by a phosphor-bronze retaining ring, which has its ends looped and flattened to extend through slots in the rim of the case for a seal wire if desired.

The Mazda lamp bulb has its filament inserted and connected with a base contact in the usual manner, and at the tip of the bulb is a duplicate contact to which the filament is connected by a fine copper wire along the outside of the glass. The bulb is held at the focal point between the contact springs, which maintain it constantly under stress, so that, in case of a blow otherwise only sufficient to chip or partly break the bulb, it will be completely shattered by the springs and will drop clear of the contacts. Sufficient space is provided between the reflector and glass cover to keep broken lamp parts from short-circuiting the spring contacts. This prevents the possibility of ignition even if the cap lamp is seriously damaged amid explosive gases.

THE CABLE HAS BEEN CAREFULLY DESIGNED

The cable consists of two braided-strand, rubber-covered conductors, each having a steel piano wire at the center. These are twisted together and then heavily rubber covered, making the cable strong, well insulated and not liable to kink. The ends are protected from wear and damage by flexible steel armor. To meet practice analogous to that of flame lamps, this electric lamp is designed to be supplied to miners from the lamp house. The outfits are to be assembled and locked with the lamps burning when delivered, and are to be returned to the

lamp house in the same condition at the end of the shift. No care or attention whatever is required from the miners.

Direct current only should be used for charging. In some instances mercury-arc-rectifier or motor-generator sets may be required to change alternating current into suitable direct current. Small sets adapted for this purpose can be supplied readily. Racks arranged for charging batteries conveniently in quantities are also offered.

Extracts from a Superintendent's Diary

There are two possible ways of keeping in touch with the affairs of the world. One is to travel extensively and the other is to associate with people who *have* traveled extensively. I have been able to travel but little; however, because of the fact that widely traveled men are continually called into our camp on business, I have been able to satisfy my desire to keep tab on what is going on in the world to an extent that often astonishes my acquaintances, who have come to think of me as a man almost buried from civilization.

This week, for example, I have been constantly thrown with four men who are experts in four different lines of work, and owing to their reputations in their respective fields, they have received calls from all the corners of the earth and have been to some of them many times.

One is a designing engineer for a coal-washing equipment company, one a consulting engineer in private practice, specializing on valuation reports for boards of directors, one a field superintendent for a company operating diamond drills and one an expert on byproduct coke ovens.

They were strangers to one another and their arrival in our camp simultaneously, on business connected with their professions, was purely accidental, but because of the isolated location of our camp and the fact that all of them had to make my office their headquarters, we were all soon on most intimate terms.

If any one of these men had come alone I would have gained much information (two men can not be thrown together in isolated surroundings without unbridling), but the four together comparing experiences and discussing viewpoints kept me in the clouds most of the time.

It is extremely doubtful if four more interesting men could be found than those who have just left our camp.

They have, in times past, been sent to all parts of the globe in search of all sorts of information by all kinds of people. Sometimes their employers have been rascals trying to get the best of honest associates, and at other times their reports have been desired by worthy men searching for evidence to make possible the ousting of rascals.

Because their own actions must be always kept above suspicion, they have learned the importance of inquiring closely into the motives of all who would employ them. As a result they have become most excellent judges of men and have acquired a vast amount of information covering the possibilities of companies now organized and others that hope some day to complete an organization.

The reports which they are employed to furnish are not always concerned with technical details alone but often most fully cover market conditions and possibilities, railroad and transportation facilities, tariff influences, labor conditions, etc. It naturally follows that these men have become so familiar with the people and governments of the civilized and uncivilized countries of the globe, that they comment on a newspaper item about China or Alaska for example very much as I might discuss a happening in my own country.

I feel very sure, however, that such men are hard to draw out when thrown with a crowd, especially if there are any professional men present; so in recalling the pleasure I have derived from this and many similar appointments with mining experts, I am inclined to hold that life in a mining community has many very delightful advantages after all.

Explosion at the Prospect Colliery

An explosion occurred on Feb. 18 at the Oakwood Shaft of the Prospect Colliery operated by the Lehigh Valley Coal Co. near Wilkes-Barre, Penn. It caused the death of 13 men and boys.

The scene of the explosion was a chamber off the gangway just east of the foot of No. 10 slope which is driven in the Red Ash vein and connects with the various levels.

It is believed that behind the coal breast was a large body of gas under heavy pressure contained in the crevices of a piece of faulted coal. This breast had been weakened by a blast and was broken down suddenly by the gas pressure. The escaping gas was lighted by an open lamp of a laborer who, with the miner, was driving the chamber.

The miner after firing the shot waited the proper length of time for the coal to fall and then entered the chamber and tested the roof, examining the face for gas with a safety lamp. He found the face free from gas and sent his laborer in to load the coal. This man used a naked light. Shortly after he went to work, the face, weakened by the blast, gave way before the gas pressure. The coal runs quite freely, and the thin shell was thus easily blown out.

On the gangway, a group of men and driver boys, runners, and nippers had seated themselves for lunch. The explosion swept down on them without warning and almost all of them were roasted alive. About thirty men were employed in the section in which the explosion occurred. Only those miners and laborers were injured who were working adjacent to that chamber where the gas was ignited.

Had it not been the lunch hour, the loss of life would not have been so great, for there would not have been so many on the gangway. Instead of an accident of ordinary size the chance presence of the men in the roadway made it a disaster of larger proportions than has occurred in a Lehigh Valley Coal Co. mine for a long time. It was the more pathetic that all the victims except two were less than 22 years old.

The report of the explosion could be heard on the surface. It tore down pillars, brattices and other development timber and in many cases caused heavy falls of roof. The work of rescue was immediately started, General Manager F. M. Chase ordering first-aid and rescue corps from Dorrance, Henry, and the Pittston Division Collieries to the scene.

A bad fire broke out in the gangway and was not subdued until after 72 hours of hard work.

Twenty Men Drowned in Mine near Nanaimo, B. C.

A sudden incursion of water from the old Southfield colliery into South Wellington Mine No. 1 of the Pacific Coast Coal Co. formerly known as the Fiddick colliery, at 11:30 a.m. on Feb. 9, resulted in the death of 20 men, including the mine manager, Joseph Foy.

According to the president, J. H. Tonkin, the company believed the workings were hundreds of feet away from the water, and the intention was to leave everywhere a 100-ft. pillar. It is said that the idea prevailed that, at the point where the incursion happened, the pillar was 450 ft. thick whereas 50 ft. was thought to be ample for safety.

David Nillerst, a fireboss, was indirectly the cause of the accident. He fired the shot releasing the water which poured into the workings and drowned 17 men. Joseph Foy, William Anderson and Thomas Watson were later victims, the two last mentioned having escaped from the flood.

Foy, on his way to the accident, met Thomas Watson and three other men and asked them to go with him to see if anything could be done. There was a counterslope or parallel airway and he hoped that some men could be rescued by that roadway.

The Manager and Two Other Men Risk and Lose Their Lives

The *Daily Colonist* of Victoria says:

Foy, with Watson and the others following, proceeded to a point in the counterslope where there was an air regulator. Debouching on the counterslope at this point was a slant to the main slope, and in this crosscut was a stopping. It was the washing out of this stopping which caused the death of Foy and Watson.

On the low side of the regulator was a drop of 3½ ft., and, when Foy clambered through the opening and dropped to the floor, he was up to his waist in water. The jar of the jump extinguished his lamp, and he asked the men on the high side of the regulator for one of theirs. His companions lighted his wick and at the same time Tom Watson climbed through the regulator and into the water.

It is said that at this time Foy could hear the shouts of victims down the counterslope, and this explains the willingness of the men to follow him. But they did not know the danger to which they were exposed, for the water had backed up the main slope well above the slant and was bringing a severe burden to bear on the stopping by which it was blocked. Just as Watson scrambled through the regulator the stopping broke down and the wave of water engulfed Watson and Foy, who could not climb back through the opening.

Another man who risked and lost his life for others was William Anderson. He was working in No. 3 level, where the flood occurred, but succeeded in reaching the main slope. Then he remembered that his brother-in-law, Robert Millar, had been working down the slope lower than No. 3 level, and he thought he would at least try to warn him and the other men working in that section. He handed his coat to his partner, Gourlay, and started down the slope. Part way down he came across a boy tending a winch, and told him to run for his life. The boy reached safety, but Anderson continued on to his death.

Were the Drillholes Omitted?

It will be a long time before the responsibility for the accident will be determined. Meanwhile, of course, there will be much interest in the question whether the drillholes were kept ahead of the work as required under the Coal Mines Regulation Act. Unfortunately a severe cave-in has occurred under a stream which carries the water from Becks Lake, and much water has poured into the workings. The stream will be diverted, at once, but the damage is now largely done and the dewatering of the mine will be no small task.

The families of the deceased miners will receive $1500 each as compensation. Seventy-eight other mine workers were in danger of being engulfed in the flood, but they managed to escape.

The Nanaimo district inspector, John Newton, is in charge, in the absence of Thomas Graham, the chief inspector, who is at Fernie, Crowsnest pass, inquiring into the cause of the explosion at Coal Creek colliery on Jan. 2, in which the district inspector lost his life.

Some Account of the Mine

The mine at which the accident occurred is at South Wellington, four miles south of Nanaimo on the Esquimalt & Nanaimo Ry. The mining of coal was commenced in 1907 by the South Wellington Coal Mines Co., Ltd., on what were then known as the Fiddick and Richardson estates.

The coal seam, the old "South Wellington" coal, a continuation of the "Douglas" coal at Nanaimo, was developed by three slopes, the larger of the three being 13 ft. wide and the two others, parallel with it, being 10 ft. in width. The seam was from 6 to 16 ft. thick and the coal was of good quality. The room-and-pillar method of working was adopted, though, where the coal was thin, longwall was attempted.

The mine was apparently conducted with some regard for safety, for two 2-hr. Draeger helmets and one of one half-hour capacity were provided. There were four oxygen tanks and a pulmotor kept on hand. Monobel powder and electric batteries were used exclusively in the firing of shots.

However, it may be that the simple precaution of drilling ahead of the work was overlooked. Sometimes expensive equipment can be obtained where items appearing on the daily cost sheet are cut off in the interests of economy though they are equally necessary for safe operation.

Recent Legal Decisions

Contract Which Need Not Be in Writing—The statute which provides that an agreement to pay the debt of a third person shall not be enforceable unless reduced to writing and signed thereby, does not apply to a promise to pay for coal delivered to a third person, where the seller refused to make delivery in the absence of such promise, which, in the circumstances, must be deemed to be an original and not a collateral obligation. (Texas Court of Civil Appeals; Timpson vs. Roach, Stansell & Crane; 170 Southwestern Reporter, 863.)

Negligence Must Be Direct Cause of Accident—A miner injured through sudden movement of a cage, through which he was passing at the bottom of a shaft, cannot recover damages against the employing operator on the theory that the latter violated statutory requirements concerning signaling devices, if it appears that the accident resulted from the miner's own violation of orders which required him to use a passageway around the shaft, instead of passing through the cage. (Colorado Supreme Court; Colorado Capitol Coal Mining Co. vs. Chatfield; 143 Pacific Reporter, 1095.)

Rights Under Coal-Mining Contract—An agreement by a land owner that an operator may continue to remove coal at a royalty of 25c. per ton mined creates the relation of lessor and lessee, and not a sale of the coal in place. A clause in a lease providing for payment of coal mined in accordance with the lessee's "usual condition and practice" does not prevent the lessor from recovering royalties on coal passing through a ⅝-in. mesh, although the lessee has been in the habit of appropriating such coal without payment therefor, if such practice was not known to the lessor. (Pennsylvania Supreme Court; Girard Trust Co. vs. Delaware & Hudson Co.; 92 Atlantic Reporter, 129.)

The Hampton Roads Coals--IV

By F. R. Wadleigh*

SYNOPSIS—This is the concluding article of this series. This installment takes up the Virginian district, with some interesting comments on the railway by that name. The probable future of the Hampton Roads coals is discussed, as is also the question of transportation to the foreign markets.

The Virginian Ry. is one of the best equipped coal-handling roads in the world. It was built by the late H. H. Rogers, for the purpose of developing the coal fields of West Virginia, and constructed with the sole idea of handling freight at a minimum cost. No expense was spared to build the road according to the most approved standards of railroad construction and equipment, so as to make it possible to handle the heaviest trains with one locomotive.

The road was opened for through traffic on Apr. 1, 1909. It extends from Deepwater, W. Va., where it connects with the Chesapeake & Ohio Ry., to Norfolk, Va., a distance of 436 miles. The tidewater terminals and coal pier are at Sewalls Point, on Hampton Roads.

Shipments of coal over the Virginian in 1913 amounted to 4,555,331 tons, of which 3,283,677 tons, or 72 per cent., were dumped over the Sewalls Point pier, the balance going to the inland Eastern trade. The road has, as yet, no Western outlet. Nearly all of this coal was from the New River field, as there are at present only two operating mines in the Kanawha beds, and about 75 per cent. of their output is used as locomotive fuel.

The average distance from the mines to tidewater is 388 miles, and the maximum distance, 427 miles. The freight rate on all coal shipped to tidewater is $1.40 per gross ton.

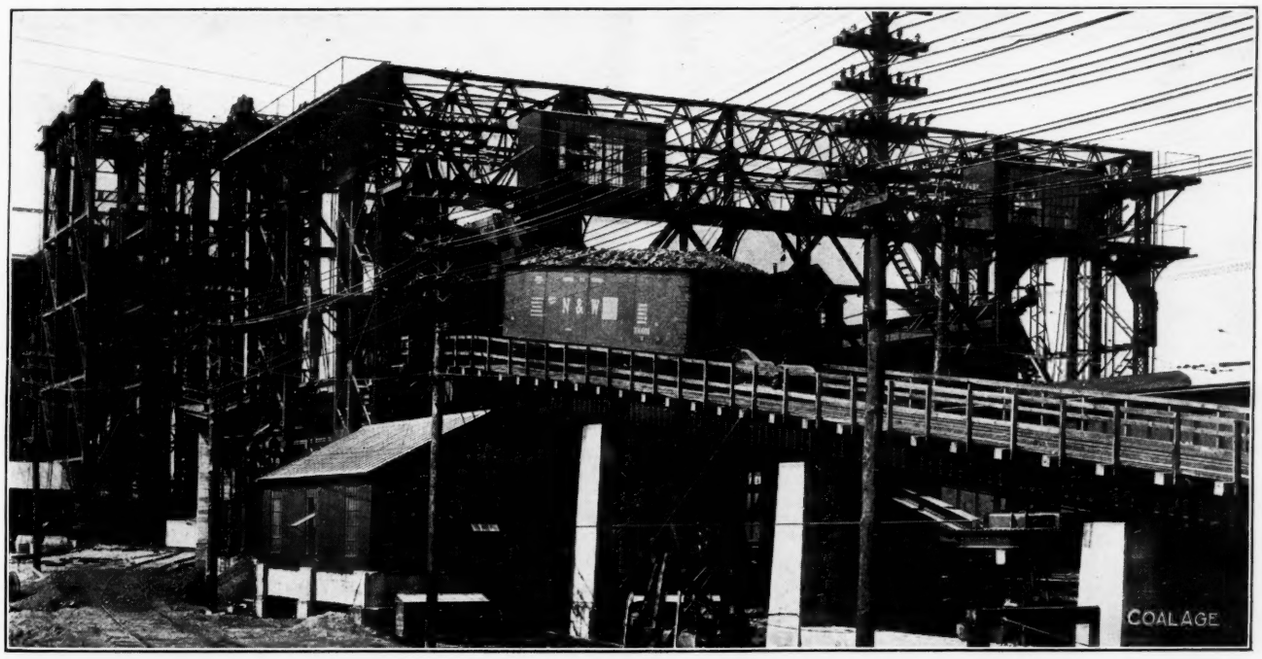
For handling its coal traffic, the Virginian has 108 locomotives, 250 cars of 80,000-lb. capacity and 5450 of 100,000-lb. capacity.

There are 58 mines on this road, all but three being in the New River beds, Sewell and Beckley, one in the Pocahontas and two in the No. 2 Gas and Eagle beds of the Kanawha measures.

Virginian Ry. District

About 37 per cent. of the total shipments of New River coal are handled over the Virginian Ry., and as noted elsewhere, some of the mines in this district are also served by the Chesapeake & Ohio Ry. Of the New River coal dumped over the Hampton Roads piers, 51 per cent. moved over the Virginian in 1913.

The two mines in the Eagle and No. 2 Gas beds of the Kanawha field also ship to Hampton Roads. One of these mines is operating in the No. 2 Gas bed alone, where the coal is of excellent quality, especially as a locomotive fuel. Analyses of this coal are given in the accompanying table:



Shore-End View of the New Pier of the N. & W., Showing Duplicate Car Dumpers and Elevators

ANALYSES OF VIRGINIAN RY. DISTRICT COALS

	No. 1	No. 2	No. 3	—As Received—	
Moisture	Dry	Dry	0.85	4.60	Dry
Volatile matter	29.87	30.63	32.83	.....	30.57
Fixed carbon	64.88	65.92	60.32	.....	64.85
Ash	5.25	3.45	6.00	.....	4.58
Sulphur	0.88	1.09	1.60	.....	0.82
Hydrogen	5.09	5.02	.....	.....	.....
Carbon	82.46	82.42	.....	.....	.....
Nitrogen	1.42	1.59	.....	.....	.....
Oxygen	4.95	6.43	.....	.....	.....
B.t.u.	14,697	14,866	14,593	14,153	14,835

No. 1. Mine sample, U. S. Bureau of Mines Bulletin No. 22. No. 2. Shipment car load, U. S. Bureau of Mines Bulletin No. 22. No. 3. Shipment three cars locomotive fuel, Fuel Testing Co. analysis.

*Consulting engineer, 426 Real Estate Trust Bldg., Philadelphia.

The other mine is working both the Eagle and No. 2 Gas beds, loading both over the same tipple. It produces an excellent steam coal, most of which goes to Hampton Roads, for shipment to New England and for bunkers.

The receiving yards of the Virginian Ry. have a capacity of some 2500 cars, and in addition to this there is a pier yard for both loads and empties.

The coal pier of the Virginian Ry. at Sewalls Point has made some remarkable records in loading ships. It was the first cargo pier on the Atlantic Coast to be equipped with car dumpers, and its operation has been very successful. The pier is 1045 ft. long from bulkhead to outer end and 70 ft. above low water; the slips on each side are 140 and 300 ft. wide, with 30 ft. of water alongside. Each side has 31 coal pockets and adjustable chutes.

The rated capacity of the pier is 1500 tons per hour, but 1721 tons per hour have been loaded.

An example of the rate of loading at this pier is as follows: Steamship "Melrose" arrived at 12:25 p.m.; commenced loading 12:35; loading completed and vessel ready for sailing at 5:35; cargo, 7238 tons; bunkers, 238 tons.

Mines and Mining Methods

The systems of mining and preparing coal are practically the same in all of the fields shipping to Hampton Roads, and the following brief outline will cover the subject.

In all of the coal fields tributary to Hampton Roads, most of the mines are opened by drifts, the shaft and slope operations comparing as follows:

	Shafts	Slopes
Pocahontas	7	7
Thacker and Kenova	1	0
Clinch Valley	0	0
New River	18	5
Kanawha	..	..

The depth of the shafts runs from 675 ft. at Parral in the New River field down to 100 ft. in the Pocahontas.

The mining methods used are all based on the room-and-pillar system. Great improvements have been made of late years in the efficient working of the mines, especially by the larger companies, as shown by the increase in the percentage of coal recovered and in the output per man employed.

Screening and Sizing—Probably 75 per cent. of the mines in all the districts considered have some provisions for screening their coal, either for making sizes for domestic use, taking slack out of run-of-mine coal for sale or for coking. The usual sizes are:

Run-of-mine	Standard 35 to 40 lump
Lump	Over 3-in. screens
Egg	Through 3-in. over 1½-in. screens
Nut	Through 1½-in. over ¾-in. screens
Nut and slack	All through 1½-in. screens
Slack	All through 1-in. or ¾-in. screens

Practically none of the lump, egg and nut sizes are shipped to Hampton Roads from either the Pocahontas or New River fields, all coal of this kind going inland East or West, for domestic use. There is, however, quite a large tonnage of nut and slack coal shipped to New England for steam making.

Cleaning the Coal—There are five washeries in the Pocahontas field and none in the New River; all of the Hampton Roads coal is cleaned by hand, by the same general methods, as follows: In the mine, by the miner; in the railroad car, as it is being loaded; on picking belts and conveyors.

There are usually some more or less efficient provisions to avoid breakage, but there is much room for improvement. Some of the newer tipples are equipped with conveyor loading booms that can be lowered into the railroad car, avoiding the usual drop from the chute and screens.

The Future of the Hampton Roads Coals

The following table will show the varieties of uses to which Hampton Roads coals are adapted:

Use	Best Coal to Use
Stationary steam plants	Pocahontas, New River, all others
General, hand-fired	Pocahontas, New River, all others
Where minimum smoke is desired	Pocahontas and New River
Stoker-fired steam plants	All coals
Locomotives	All coals
Steamships	Pocahontas, New River and lower volatile
Gas making, illuminating	Kanawha gas, Kentucky gas
Gas making, producers	New River, Kanawha splint and gas
Furnaces, heating and melting	New River, Thacker, Kanawha gas and splint coals
Coke making, byproduct ovens	Kanawha gas and mixtures, Eagle bed coals
Smithing and forging	Pocahontas, New River
Domestic, grates and furnaces	Pocahontas, New River, Thacker, Kanawha cannels and splints

Domestic Markets—The shipment of coals from Hampton Roads to the coastwise markets will continue to grow under normal and existing conditions, with the increase in manufactures and other lines of business using coal. It is not likely that the present balance of shipments as between these coals and those from Baltimore and Philadelphia will be altered, unless unforeseen changes take place.

The only disturbing factor in sight will be the new coal-shipping facilities at Charleston, S. C., to be completed during the current year. Just what effect these piers will have is rather hard to determine at present. The coals will all be comparatively high volatile, from 31 to 33 per cent., and not as high in heat value as Pocahontas or New River, but they are excellent locomotive coals and good steam fuels. How much Hampton Roads coal they will displace depends largely on the f.o.b. Charleston price. The freight from the mines to Charleston has been definitely fixed at $1.40 per gross ton, while the actual mining cost is not to exceed 90c. per net ton.

The placing of these coals, however, will probably affect the Philadelphia and Baltimore coals more adversely than those from Hampton Roads, especially in the South Atlantic and Gulf trades. It is not likely that they will be shipped in any quantity to the New England markets, as the distance from Charleston to Boston is 35 per cent. greater than from Hampton Roads, not to mention the dangers of the Diamond Shoals or Cape Hatteras. In addition to this, they are not of the quality most used in New England.

Foreign Markets—For some weeks after the beginning of the war, all exports of coal from Great Britain and Australia were prohibited. Now that this embargo has been lifted, the British coal agencies are making energetic efforts to supply their South American and Italian trade. It is true that all Admiralty British coals are withdrawn, but there are others almost as good, and but little Admiralty coal went to these markets even in normal times.

As it stands now, Italy and the South American countries are in great need of coal, but this emergency has found us unprepared; we are dependent on foreign bot-

toms to handle the coal and our coal agencies are willing to sell only for cash. We must have the necessary banking facilities in foreign countries if we are to do business with them, a fact that we do not seem to have accepted until lately.

The coals from Hampton Roads will undoubtedly experience a large increase in foreign buying, but after the present war is over, will we be able to hold this new business? If England still maintains command of the seas, our own ships will be put out of business, unless our present navigation laws are changed, as it costs over 50 per cent. more to operate under our flag than the British. Under our laws, all officers of the United States ships must be citizens and our ships must have three navigating officers in addition to the captain, while the English only require two; our vessels must have a 25 per cent. larger crew, and our wage scale is much higher.

A United States 4500-gross-ton ship costs per month, in wages, $1700, while a British 6000-ton ship costs $850 per month. Our system of measurement of cargo space and classification often operates against our ship owners as compared with the British measurement. We will, therefore, after the war is over, either have to lose business, operate at a loss, change our navigation laws or sail our ships under foreign flags. [Since writing these notes, the President has suspended the operation of a part of our navigation laws.]

The distances (nautical miles) from Hampton Roads (Newport News), Baltimore, Philadelphia, Charleston, S. C., and New Orleans to various coaling ports of the world, also time of voyage from Hampton Roads at nine knots' speed *via* Panama Canal to Pacific ports, are given in the accompanying table.

From / To	Hampton Roads	Baltimore	Philadelphia	Charleston	New Orleans	Time from Hampton Roads, Days	Hr.
Aberdeen	3,248	3,372	3,216	3,528	5,078	13	25
Adelaide	10,177	10,401	10,343	10,071	9,785	47	6
Aden	6,657	6,781	6,634	6,908	7,846	30	20
Alexandria	5,144	5,268	5,121	5,395	6,333	23	21
Antwerp	3,478	3,602	3,446	3,810	4,801	16	2
Bahia	3,994	4,118	4,092	4,010	4,475	18	12
Barbados	1,699	1,823	1,828	1,630	2,115	7	21
Barcelona	3,872	3,996	3,849	4,123	5,061	17	22
Bordeaux	3,417	3,541	3,401	3,649	4,671	15	20
Bremen	3,727	3,851	3,694	4,059	5,050	17	6
Buenos Aires	5,774	5,898	5,870	5,790	6,225	26	17
Cherbourg	3,233	3,357	3,201	3,565	4,531	14	23
Colon	1,772	1,896	1,938	1,566	1,380	8	5
Constantinople	5,165	5,289	5,142	5,416	6,354	23	22
Copenhagen	3,722	3,846	3,690	4,002	5,228	17	6
Genoa	4,208	4,332	4,185	4,459	5,397	19	12
Gibraltar	3,360	3,484	3,337	3,611	4,549	15	14
Glasgow	3,126	3,250	3,094	3,498	4,447	14	11
Hamburg	3,745	3,869	3,712	4,077	5,068	17	8
Havana	988	1,112	1,158	605	588	4	13
Havre	3,299	3,423	3,267	3,631	4,622	15	7
Honolulu	6,533	6,657	6,699	6,327	6,141	30	5
Jamaica	1,257	1,381	1,423	1,051	1,115	5	18
Lisbon	3,177	3,301	3,156	3,378	4,676	14	16
Liverpool	3,211	3,335	3,149	3,548	4,532	14	21
London	3,428	3,562	3,406	3,770	4,761	15	22
Madeira	2,908	3,032	2,880	3,270	4,056	13	11
Malta	4,345	4,469	4,322	4,596	5,534	20	3
Manila	11,215	11,339	11,381	11,009	10,823	51	23
Marseilles	4,050	4,174	4,027	4,301	5,239	18	18
Montevideo	5,659	5,783	5,757	5,675	6,140	26	5
Naples	4,330	4,454	4,307	4,581	5,519	20	1
Oporto	3,092	3,216	2,969	3,360	4,344	14	8
Panama	1,822	1,946	1,988	1,616	1,430	8	10
Para	2,836	2,960	2,947	2,760	3,136	13	3
Pernambuco	3,520	3,738	3,712	3,630	4,095	16	7
Port Said	5,260	5,384	5,237	5,511	6,449	24	9
Riga	4,175	4,299	4,154	4,400	5,226	19	8
Rio de Janeiro	4,590	4,808	4,782	4,700	4,813	21	6
St. Thomas	1,291	1,415	1,425	1,194	1,590	6	0
St. Vincent	2,956	3,110	3,023	3,080	3,870	13	19
San Francisco	5,099	5,223	5,265	4,893	4,707	23	15
Stockholm	4,128	4,252	4,036	4,329	5,574	19	3
Suez	5,149	5,471	5,324	5,598	6,536	23	21
Teneriffe	3,050	3,174	3,049	3,260	4,181	14	3
Trinidad	1,800	1,924	1,928	1,605	2,081	8	8
Valparaiso	4,437	4,561	4,603	4,231	4,045	20	13
Vera Cruz	1,783	1,907	1,953	1,400	790	8	6

Before the war began, the Hampton Roads coal exports were showing a steady increase, with excellent prospects for the future, partly based on the opening of the Panama Canal. These coals were being quoted daily in foreign markets, a number of contracts for them had been made and some of the larger companies had established their own agents in foreign countries. In brief, the outlook was extremely promising and may be made more so, if the shippers take advantage of present conditions, do not raise prices and supply coal properly prepared.

The proposed legislation under which the Government proposes to buy and operate merchant ships will open the doors for a large-sized political job and will not aid our export trade. We do not need large transatlantic liners or ships of that class; what is required is tramp ships—cargo boats that can be operated economically, using 30 to 40 tons of coal a day, which are adaptable for bulk cargoes, grain and coal, and not passengers and package freight.

Supplementary Notes

Domestic Markets—Since writing the above, the unexpected and unexampled rise in ocean freights and demand for ships in the overseas trade has somewhat changed the conditions in the coastwise markets.

A number of coastwise collieries and schooners have been withdrawn from their usual trade and chartered for ocean voyages. This has had the effect of raising rates on coastwise business, Hampton Roads to Boston, from 65c. per ton, Oct. 1, 1914, to $1.10 today, with prospects of $1.25 being reached.

Such high-water rates should undoubtedly increase the all-rail shipments to New England as well as to southern ports. The near approach of the contract season will cause the buyers in these markets to figure closely on the comparative costs and quality of the Pennsylvania and Hampton Roads coals.

Foreign Markets—As written several weeks ago, the statements made above as to our export trade were justified by conditions, but today these conditions are altogether different.

Our exports from Hampton Roads have fallen off considerably, due to the high ocean freights and because the usual difference in rates as between British ports and our own has not been maintained, making the delivered price of Hampton Roads coals higher than even the best grades of British coals at foreign ports.

There seems no immediate prospect of any lowering of ocean freights; they are higher now than they have been in the world's recent history. For instance, in 1863 freight on coal from Cardiff to Genoa was $5.35, a point never reached since, until today; now it is $7.53.

HAMPTON ROADS EXPORTS

December, 1913	December, 1914
251,955 tons	140,215 tons
January, 1914	January, 1915
Europe and Africa	Europe and Africa
49,542 tons	34,066 tons
South America	South America
39,589 tons	23,422 tons
Total exports	Total exports
218,716 tons	117,607 tons

Compare the following c.i.f. prices as quoted at Genoa, Jan. 30:

Best Welsh	12.64
Seconds, Welsh	12.39
Monmouthshire	12.15
Best gas	11.91
Pocahontas and New River	13.34

It is more economical to run the boilers above their rating 100 or even 200 per cent. than to carry banked fires under stand-by boilers. The drop of efficiency is small for such excess steam generation above rating as that indicated.—Bromley in "Power."

The Labor Situation

SYNOPSIS—Indications favor the initiation of the "open shop" in northeastern Ohio, after evictions have taken place. The anti-screen law is declared constitutional. A strike is developing in the Fairmont region. The legislature in West Virginia is asked to decree that all coal be weighed. Arkansas is now pacified. No more strike benefits will be paid in Colorado.

At a meeting of the eastern Ohio operators held in Cleveland on Feb. 16, they decided to open the mines in that district on an "open-shop" basis. This decision was only made after the joint committee of operators and miners and the federal investigators had failed to provide for arbitration.

The details of the plan were left to a special committee which was named for that purpose. Agencies representing strike-breakers and mine guards have been conferring with operators and have been in Cleveland for some time. It is believed that trouble will result from the attempt to operate, but the operators are firm in their stand that they start their mines. They feel they are fully justified in so doing because of the inconsistent position which the representatives of the miners hold relative to the wage scale.

The announcement comes from the Coshocton field that the operators will not attempt to operate the mines on the "open-shop" basis. The workings in that district have been idle since Apr. 1, 1914.

Report of Commission to Be Pigeonholed

Word comes from Washington, D. C., that the report of the Federal investigators will not be made public for some time. D. J. Keefe, of the investigators, stated that it would be rather "voluminous."

The committee named to go to Washington to confer with Secretary of Labor Wilson consists of George M. Jones of Toledo, S. H. Robbins of Cleveland, and R. L. Wildermuth of Columbus. This committee went to the national capital to inform the labor secretary that the operators had exhausted every means of settling the strike, and the operators expect to resume mining on the "open-shop" basis.

The first serious outbreak occurred at Bellaire, last week, where Industrial Workers of the World were most active last summer. A mob of about 200 striking miners seized three men employed at the West Wheeling mine and led them through the streets bearing placards "I am a scab." The mob marched its prisoners to Bridgeport. The arms of the three men were tied with ropes and they were surrounded by a strong guard

After a demonstration in Bridgeport, the mob started back to Bellaire, permitting two of the men to escape. Arriving at Bellaire the sheriff rescued the remaining man, who had been pretty badly beaten. Work at the West Wheeling mine was resumed the following morning under protection from the sheriff.

The Sunday Creek Co. Contract

Mine 256 of the Sunday Creek Co. started operation in the Hocking Valley field recently at a scale which if duplicated in eastern Ohio would give the men 38.57c. per ton on the run-of-mine basis. The company agreed to pay the recognized rate of 47c. per ton for the lump coal and proposed to estimate the slack coal at 26.59 per cent. of the lump and to pay for it at the same rate. But the proportion of slack coal made according to the determination of the commission was 28 per cent. of the whole coal.

If 72 per cent. of the coal is lump, the amount of lump coal in a ton will be 1440 lb. If 26.59 per cent. is allowed for slack nearly 383 lb. will be added. Thus the miner will be allowed 1823 lb. for a ton of coal, for which he will receive at 47c. almost 42.84c., which is 6.8c. less than last year's scale.

In eastern Ohio only 64 per cent. of the coal is lump or 1280 lb. per ton. Adding 26.59 per cent. for slack, the miners would receive an additional 340 lb. A ton would therefore weigh only 1620 lb., which at 47c. would give the miner 38.57c. per ton. If the statement is correct, it is clear that the Sunday Creek Co. has jockeyed itself into an extremely favorable contract.

New Freight Rates Are Proposed

The miners in West Virginia are arguing the passage of a bill establishing a maximum freight rate on intrastate coal traffic. The schedule is to be as follows: 125 to 175 miles, $0.75 per ton; 175 to 300 miles, $0.80 per ton, and 300 miles or more, $0.85. They hope in this way to compete in Ohio at least with the coal mined in West Virginia and Tennessee, for it is claimed that intrastate rates are higher than interstate rates to some places.

Operators are divided on the measure. Some claim it is introduced only to becloud the situation. Other operators and the miners favor the measure. At a conference with Governor Willis, Feb. 17, the miners were represented by President John Moore, Secretary G. W. Savage, former Representative Percy Tetlow and Judge G. B. Okey, while John H. Winders, of the Sunday Creek Co., headed a delegation of operators.

This matter was brought up a year ago by Senator Dolliver, who showed that the rate on Ohio coal from Nelsonville to the Toledo docks was $0.80, while West Virginia coal was hauled from Armitage, 12 miles farther from Toledo than Nelsonville, at $0.40 per ton. Cars were assembled by the carrier at Nelsonville, while at Armitage the train was already made up. These rates apply only to Lake coal, the rate from Nelsonville to Toledo proper being $1 per ton. It is a question whether the General Assembly or the Interstate Commerce Commission should act.

Evicting Northeastern Ohio Miners

The Glen's Run Coal Co. is now endeavoring to secure evictions of its idle men. Its case against Leonard Snell, of Rush Run, was tried before the justice of the peace and a jury on Feb. 16, and resulted in a verdict for the coal company, giving it possession of its property. Five other cases are pending, but as jury trials are demanded the progress of law is slow.

On Feb. 23, the Supreme Court affirmed the decision of the Federal district court of northern Ohio holding the mine-run or anti-screen law of Ohio constitutional.

The Fairmont Strike

The continued references to the rates of mining in Ohio appearing in the daily press of West Virginia has apparently started a strike of no small dimensions. This outburst appears to have surprised the union leaders, who do not feel financially able at this time to back strikes in more than one region. However, the strike has arisen, and they are but little disposed to frown on what under normal conditions they would encourage. Coming after a long period of short-time operation, the men are not in a position financially to put up a long contest.

Apparently the trouble crystallized with the Jamison Coal & Coke Co. at its Farmington mines. This concern had hitherto supplied its miners with free powder. An order was issued requiring them to supply their own. The miners claimed that this was the equivalent of a reduction of 4c. per car loaded, and a strike followed. On Feb. 20 there was a severe riot at Farmington and a fight between C. D. Conaway, the sheriff, assisted by 12 deputies and the striking miners. W. R. Riggs, a constable, was alighting from his buggy when the horse became frightened at the revolver shots and ran away, dragging Briggs, whose foot was entangled in the reins. He was found unconscious and was hurried to the Cook Hospital at Fairmont, W. Va. He is believed to be dying from internal injuries and a fractured skull.

The riot started when the sheriff tried to arrest striking miners on a charge of throwing stones at workmen. Two were arrested and were about to be taken to jail by Deputy Sheriff George Straight, when a score of striking miners surrounded the officer and his quarry and demanded that he release his prisoners. The men arrested escaped, and also all those who had interfered with the sheriff's officer. Twenty-five men were immediately sworn in, but the rioters by that time had dispersed to the woods. The sheriff of Marion County appealed on Feb. 22 to Governor Hatfield, asking him to send militia to quell the disturbances at Farmington. Meantime there has been no further exhibition of disorder.

The Ronda and Dry Branch mining dispute still continues. In violation of their agreement the men remain on strike. The operators' commissioner, however, has discussed the issue with the representative of the miners, though he would have been justified in refusing, seeing that the miners should work while the case is under arbitration. The men expect to submit the matter to John P. White, president of the United Mine Workers of America.

Coal by Weight or Measure

On Feb. 9 the Mines and Mining Committee of the West Virginia House of Representatives and Senate held a hearing

at Charleston, W. Va., relative to a bill providing that the miner must be paid by weight and not by measure.

Senator Sam B. Montgomery, who is legal representative of the United Mine Workers of America, argued for the bill, urging that the first cost to a small mine for scales would be only $250, while a large mine could buy a self-recording scale for $500. In all, he figured that $146,250 would fit up the coal industry in West Virginia with scales.

He stated that cars at any one mine varied in size and that the amount loaded into them depended on the height to which they were rounded on top. The argument that in good times the miners took advantage of this fact by loading their cars barely to the level of the end gates did not, he declared, make the condition morally sound, and it was equally wrong for operators to bring pressure to bear on their men to have the cars loaded above the rated capacity.

As coal is sold invariably by weight, he could not see why miners should not be paid in the same way. He argued that the weight of coal per cubic yard was not uniform and that the miner should be compensated for the burden of the material handled and not for its bulk. He also declared that as operators could increase the size of a car and keep the rate uniform, it furnished a species of improper competition from which operators and miners in West Virginia alike suffered. He asserted that cars usually held more than their rating would indicate. The state law requires the operator to mark in plain numerals the amount of coal each car will hold. This law, he said, was almost invariably violated.

The Reply of the Operators

The operators were represented by George W. Williams, of Beckley, who declared that the proposed law was unconstitutional, citing in support of his contention the mining laws of Colorado, Kentucky, Indiana, Ohio, Illinois, Pennsylvania and West Virginia and decisions of the Supreme Court of West Virginia and of the United States. It would interfere with freedom of contract and would be class legislation unless it also applied to the farmer who would under similar provisions be obliged to sell fruit, grain, hay, eggs, milk and other products by the pound, instead of by more convenient and adaptable methods.

An operator, D. T. Evans, declared that the use of scales had been a constant source of trouble between the miners and the men, and that he had never had so little dispute and discontent as when the coal at his mines was paid for by car and not by weight. The operators declare that the introduction of scales and the hiring of weighmen would add considerably to the cost of mining at a time when the industry is suffering from the expenses resulting from the Workmen's Compensation bill.

About 80 men employed at the Opperman Coal Co.'s mine at Blair, Logan County, W. Va., went on strike Feb. 16. The men allege that the operators sublet the work to contractors.

Troops Withdrawn in Arkansas

All the troops sent into Arkansas by Secretary of War Garrison on Nov. 6, 1913, were withdrawn on Feb. 12, as it was believed their services were no longer needed. There had been no trouble in the Prairie Creek district, which they were guarding, at any time after their arrival, and Maj. N. M. McClure, believing that the disorder was at an end and that the civil authorities could control the disturbing element, urged that the squadron be withdrawn.

The Colorado "Strikers"

The State of Colorado is having much trouble in finding work for the former strikers and their adherents in the mining districts. The companies do not have work for all these trouble makers and many of them are starving. It is proposed that work be found for them on the public roads and that the convicts who are now working at these utilities be sent back to prison.

It was announced that no strike benefits would be paid after Feb. 20 in the Colorado strike district. While some help may be extended to the needy, no regular weekly strike pay will be dispensed hereafter.

Conciliation in the Anthracite Region

The report of the Anthracite Board of Conciliation for the year beginning Apr. 1, 1912, and ending Mar. 31, 1913, now in press, shows that the establishment of local grievance committees at the collieries of the anthracite region of Pennsylvania by the agreement of May 20, 1912, has been productive of much trouble and many misunderstandings. The number of grievances that the full board was obliged to hear was nearly double that of the previous three years together.

It has been the policy of the members of the board to use all their influence to have difficulties settled without resort to formal argument, and many additional grievances have been settled by them in their respective districts since May, 1912, without the necessity for the action of the entire board. So numerous have these been that the total number of grievances since that time to date exceeds the whole number brought before the board in the previous nine years of its existence.

Operators Sustained in 14 and Miners in Nine Instances

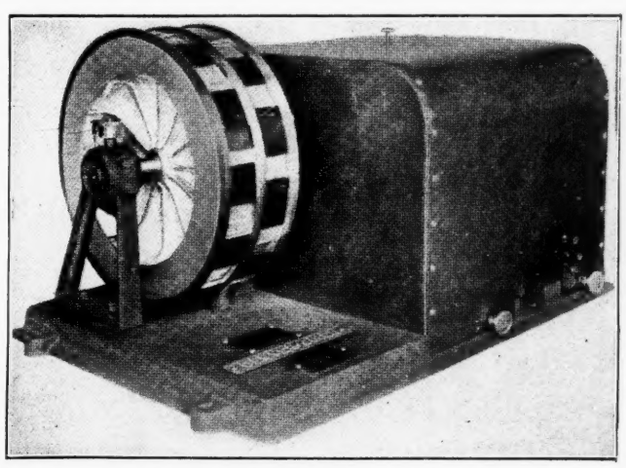
Several of the 46 cases recorded in the present volume of the board's proceedings contained two or more items for decision, so that the total number of grievances aggregates 61. Of these, 26 were withdrawn, the operators were sustained in 14, the mine workers were sustained in nine, in six cases no further action was necessary after the hearings, five were compromised and one item of one case is still pending before the board. It should be explained that many grievances are settled by a compromise of the parties, by failure to appear before the board or by the complainant quitting the employ of the company.

Twelve of the grievances presented to the board were brought by the operators, generally on account of the activities of the local grievance committees, which, it is claimed, devote much of their time to seeking causes for small local strikes. In four of these the operators were sustained, and eight were either adjusted by the parties and withdrawn, or withdrawn without prejudice.

The board consists of three representatives of the mine workers and three representatives of the operators. Its members hear the testimony, discuss the cases among themselves, and, if possible, decide them by a majority vote. In case of a tie vote an umpire is called in. The board was established by the Roosevelt Strike Commission in the spring of 1903 and has done efficient work in maintaining peace in the anthracite coal region ever since that time.

The Denver Siren

The Denver Siren, built by the Hendrie & Bolthoff Mfg. & Supply Co., of Denver, Colo., is of interest to coal-mining people. It is a motor-driven electric, fire or accident alarm, which may be operated from the telephone central's desk or any other convenient point. The rotor is made of aluminum and mounted on Hess-Bright ball bearings. The stator, which is mounted outside of the rotor, is of bronze. These two parts do not touch but operate in close proximity to each other.



THE SIREN WITH BOXED-IN MOTOR

The Siren gives best results when driven by a three-phase induction motor. When the switch is closed, the pitch rises rapidly from the lowest audible sound or that produced by about 16 vibrations per second, to the sound made by 700 vibrations per second, which is approximately high C, two octaves above middle C.

By alternately closing and opening the switch, the pitch of the Siren can be changed between these lim-

its. The sound emitted is extremely penetrating and can readily be heard for four or five miles. For best results, the Siren should be placed upon a building or tower, with no higher structure closer than about 200 ft. To prevent the instrument from becoming choked with snow or ice, a roof may be placed over it. This also tends to deflect and project in a horizontal direction that volume of the sound which would otherwise travel skyward, increasing by this much the efficiency of the instrument.

A New Mine Pump

In order to attain its maximum efficiency, a mine pump should be rigid, simple, durable and accessible. It should be strong and rugged in design to successfully resist over a long period of time the severe and rough handling which it is certain to receive in the mines. For the same reason, it should be built of as few parts as possible, each of these being abundantly heavy to do the work required of it. At the same time, since space is at a premium in underground operations, the unit should be as compact as possible.

On account of the small amount of skilled care which such a machine receives, it should be as simple in construction as possible, no more parts entering into its construction than are absolutely necessary.

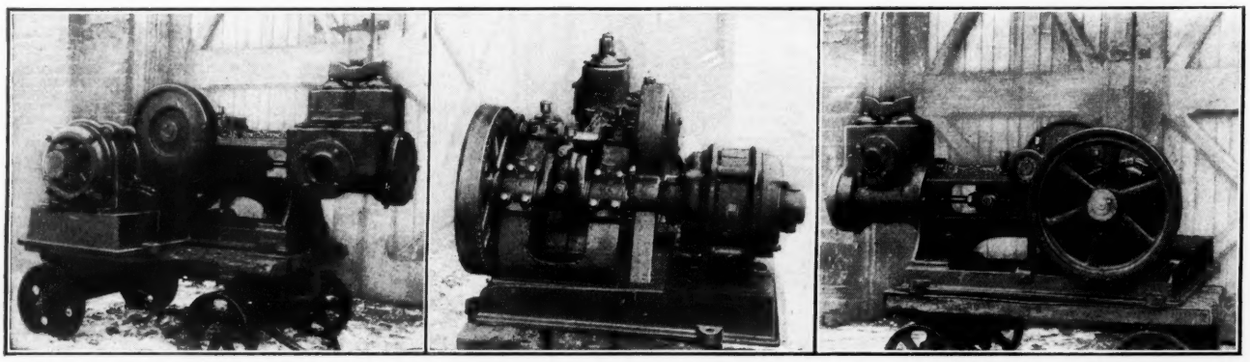
The accompanying illustrations show a mine pump designed and recently placed on the market by the J. C. Stine Co., of Tyrone, Penn. This pump has been planned with the especial purpose of meeting the severe conditions encountered in mine service and embodies many novel and interesting features. The water end of the pump may be made either of anti-acid bronze or a close-grained cast cylinder equipped with an anti-acid renewable bronze lining. This lining is so built that it may be turned six times, thus assuring the maximum possible wear of this part. All the small parts, including the valve seats, stuffing boxes, valve stems, nuts, piston and piston rods which come in contact with the mine water are composed of acid-resisting bronze. The frame is of the box type and heavy. The connecting-rod is of the marine type with a solid bushed wristpin bearing and an adjustable crankpin bearing. This rod is cast solid and the babbitt cast and expanded in place. The cap is then cut off and provision thus made for adjustment. The crank shaft is of cast steel and is made abundantly strong. The gears are all cut.

As will be noticed in the illustration, the jackshaft gear has an unusually heavy rim. This acts as a flywheel. Since the stress on the crankpin is unequal, the stabilizing effect of this wheel tends to relieve the motor or the otherwise unavoidable surges of current as the crankshaft alternately requires a small amount and a maximum of power.

The valve disks, four in number, are of rubber backed with bronze. As may be seen in the illustration, the removal of only two nuts gives access to all four of the valves. This is an important consideration under certain conditions.

The pump is so constructed throughout that no water can possibly get to any of the studs or nuts holding the various parts together. Corrosion and consequent weakening of these parts is therefore reduced to the least possible amount.

This pump is the result of much painstaking care and years of experience in manufacturing apparatus for use solely in mining. Before it was placed on the market, also, it was given a thorough tryout under working conditions. It is built with a bore of 5 in., and a stroke of 6 in., the suction is 3 in. and the discharge 2½ in. It operates at 60 to 80 r.p.m., and the capacity is from 60 to 80 gal. per min. It is small enough to be mounted on a truck traveling upon the regular mine track. This truck is so constructed that the pump may be either retained thereon for temporary work, or the four wheels may be dismounted, the truck body forming the permanent foundation for the machine.



THREE VIEWS OF THE PUMP, SHOWING ACCESSIBILITY OF THE VALVES AND THE HEAVY RIM ON THE GEAR WHEEL

One of these pumps delivering 84 gal. per min. under a total head of 54 ft. in operating continuously for 513 hr. consumed 651 kw.-hr. of electrical energy. This shows an efficiency of over 67 per cent.

Decrease in Anthracite

There was a decrease of 449,315 tons in the shipments of anthracite in January last, as compared with January, 1914. The consumption, small even for such a mild January, bears out the theory of the operators that householders are economizing coal and keeping only one stove lit where they formerly kept two or three.

Total shipments last month were 4,831,329 tons, as compared with 5,280,644 tons in January, 1914, according to the Bureau of Anthracite Coal Statistics, which now includes the tonnage of the Lehigh & New England R.R. The amount of coal on hand at Tidewater shipping ports increased from 669,833 tons on Dec. 31 to 798,125 tons on Jan. 31.

Editorials

Confederating Our Mining Societies

We received a letter this week from an engineer in central Pennsylvania who wanted to join one of the mining societies and desired to know enough about their activities so that he could make a good choice between them. It is perhaps not hard to answer his letter, but when we sent him a complete reply we could but feel that he would think that there were so many societies in the field that it was best not to join any of them.

There is no reason why all the various coal-mining institutes in West Virginia, Illinois, Pennsylvania, Tennessee, Alabama and the Rocky Mountain states should not be amalgamated into a strong organization, national in scope and of such commanding influence that everyone would desire to join the confederation.

There is no opposition existing between these various institutes. They have no relation to business. A Pennsylvanian or a West Virginian attending any of these gatherings would find his welcome warm and friendly and hear nothing of the competition between the fields, with which we are so much impressed elsewhere.

Moreover, we do not believe that anybody desires to keep the institutions apart. Several people living in one district with their interest purely local belong to other institutes in order to get the benefit of the proceedings and for the pleasure and broadening effect of visiting in other fields. Those thus affiliated with several institutes have never failed to receive a welcome wherever they went, which was perhaps conceded to them as much because of their personal excellence, as because they were members of other organizations.

If any believe that there is friction existing let them consider that meeting together in a technical convention and sitting at the same banquet board will help to change that deplorable difference of viewpoint and bring harmony out of dissension.

Some organization should make the necessary move, and which institute makes the attempt is a matter of no concern. It is unfortunate that no one association was strong enough when the others were started to make the leaders of the industry in other states extend that parent society's work instead of starting independent bodies.

And turning from the technical coal-mining field to that of safety, it would seem that the American Mine Safety Association is so large and comprehensive that no rival local organization would be started. Yet recently one was founded in Alabama which was entirely independent of the larger body though duplicating its work.

Some time ago, a local branch of the American Mine-Safety Association was about to be opened at Franklin Furnace, N. J., within territory in which there is a local branch of the National Safety Council. It was then asked why the American Mine-Safety Association does not affiliate with that body having broader aims. Perhaps that amalgamation might be advantageous, but it is surely not well to have a dozen independent mine-safety organizations in separate expensive existence all over the country, and so insignificant in many cases as to make no appeal to the imaginations and pocketbooks of the members.

Certainly the shifting membership of local institutes as compared with the permanence and strength of national bodies warns, or should warn the "home-rule" element that the local organization always has a precarious hold on existence, owing to the lukewarm support of its following.

We would be pleased to have suggestions concerning this matter from COAL AGE readers.

Sobriety in Mining Villages

There is no avoiding the conclusion that total abstinence is coming. It is not merely practical politics; it is now practical business. Just as soon as we look at it from that point, the very dregs will fall from the liquor bottle.

Mining is behind the transportation industry in this matter. For years the railroads have discriminated against drinking men, while even those coal companies which kept saloons off their property feared to be equally stringent. As a result, they gained but little from excluding the drinking places. If they had shut out drinking men, they would have gained in the character of their employees, in their output per man, in the safety of their mines, in the respectability of their villages and would have received the approval of the public.

To gain or retain a few worthless men, some companies have allowed their whole force to be debauched and have injured their own reputations, for the man who drinks heavily saves nothing, condemns his company, his working place, his home and invariably declares, usually with truth, that he has not seen a dollar for years. It is the part of folly to permit saloons to be built on the company's property, and it is even more a folly not to carry the campaign to its natural conclusion and prohibit the employment of every man who drinks to excess, if not also of all those who imbibe in moderation.

We do not believe that the companies would have had trouble from strikes had such drastic action been taken, for no one really respects a drunkard, or even grants the right of a man to his whisky. We are glad to see that the Delaware, Lackawanna & Western R.R. Coal-Mining Department has warned its foremen, driver bosses and others in authority against entering saloons.

In a short while, a few of the old operating heads in the industry who still retain the liking for a nip of whisky will go the way of all flesh and then it will be ruled out with an iron hand. After all, the foreigner is not so much bent on his liquor as we think. Across the water he can't afford to convert himself into a swill-wagon and he will not miss his beer and whisky as much as we apprehend, except perhaps at weddings and funerals.

At the recent meeting the American Institute of Mining Engineers, J. Parke Channing told of a mine in Russia which lost 60 per cent. of its men when the war broke out. Slowly the force was increased, until it had 50 per cent. of the normal number of employees. But meantime vodka had been prohibited, and that depleted force of men actually produced 30 per cent. more tonnage than the full crew of men had done before the war broke out.

The men who were working four days a week asked to be put on piece-work and to be allowed to put out product seven days a week. Later they decided that such continuous work was not desirable, and they cut the working days to six. They showed, however, very clearly that it is not so important to have many men as to have them all sober.

Charles W. Goodale, of the Anaconda Copper Mining Co., then discussed the effect which martial law and the closing of the saloons in Butte had on the accident rate at the mines of the company. On Sept. 1, 1914, all the saloons in Butte were closed for ten days. They were then opened, but only from 8 a.m. till 7 p.m. During the balance of the month, the saloons were open from 7 a.m. till 10 p.m. only.

As a result, in September only 4.21 accidents occurred per 10,000 shifts. In the August before, the rate was 11.25, and in the October after, 7.58. The rate in July was 6.22 and in November 6.07. The appearances are—though this is merely our idea—that the great loss in August was due to the drinking, consequent on the strenuous events preceding the proclamation of martial law. In any event, with excitement still almost at its height, the accident rate was lowest in September, because, concurrently, the chance to secure liquor was restricted. Probably the result would have been even better had the liquor been wholly cut off.

The Workmen's Compensation Bill is going to make some wonderful changes in the attitude of employers to the genial habit of imbibing liquor. We do not anticipate as large an improvement will arise from temperance as in Russia or perhaps even in Butte, but we do expect the change will be most perceptibly for the better.

Miners and other men whether employers or employees too often drink to excess. But we do not blame the action of a number of union men in bitterly resenting the aspersions on their sobriety said to have been made by a Delaware, Lackawanna & Western R.R. official, if the statements they quote are truly reported. But we do admire the protesting union men because in the resolutions passed they say we "do not uphold anyone going to work in an intoxicated condition." Let them make their stand even stronger, and we will applaud their declaration even more loudly.

The Fee System

The abuse of the fee system among negroes in Alabama, to which reference is made in our Ideas and Suggestions, is not confined to men of color or to citizens of that state. It exists in a degree throughout the whole country. We well remember how the constable and justice of the peace in a little mining village in Pennsylvania used to look upon the "foreign drunks" as legitimate picking. The Americans were passed over and the aliens chosen.

Order was none too well maintained because the arrests were made not to enforce order but to levy a tribute on those whose political influence would not weigh when the vote was taken. The foreign-born who did not know how to vote could be depended on to cast their ballots for all in one party regardless of the way in which some of the lesser nominees had victimized them in the recent past. And the foreigners, having no votes, had in the eyes of the minions of the law no rights deserving of respect.

Had the constable and justice been temperance advocates we might have sympathized with them in their efforts to arrest drinking men, but the justice himself liked his liquor only too well. The campaign in Pennsylvania as in Alabama was animated by a desire simply to corral the easiest, least resisting quarry.

Judge H. B. Abernethy of Birmingham has asserted his right to try cases where certain misdemeanors are committed. Particularly, he has had haled before him the negroes who have been arrested for shooting crap. This change does not directly help the negro, but it diverts the fines to public funds and discourages the activity of the exploiters of the fee system.

Judge Abernethy at a recent trial vigorously expressed his indignation saying:

> If the officers were half as diligent in running down actual criminals as they are in arresting petty offenders, there would be less crime in the city and county. The practice of rounding up negroes Saturday night for the purpose of making fees is one of the most pernicious practices in the county and imposes great hardships on a class that is practically helpless so far as the courts are concerned.
>
> In the case cited above, the solicitor agreed to nol-pros the case on the payment of the fine and costs. The law fixes the fine at $10, which in my opinion, is entirely too much for a first offender. The fine, however, is insignificant compared with the costs involved. Just think of it, $37.55 costs for a case involving nothing more than a petty offense against public morals.
>
> In nine cases out of ten, the negroes so convicted have to work out the sentence and costs on the county roads, all to the benefit of the fee-system office-holder. There is no fee attached to the court of common pleas. Judge Hickman and myself are on a salary as are both of our clerks. All the fees collected, which are very small, go into the county treasury.
>
> I propose to try all cases of this character that come before me and if the law would permit, for the first offense, I would impose a more nominal fine, but for the chronic offender, I would give the limit.

It seems that not only in Alabama but in several states north, south, east and west, a more reasonable system should prevail. A number of legislators in Alabama have been elected on the strength of their opposition to the fee system, and though there will undoubtedly be a strong lobby in favor of the spoils, the advocates of a more scientific system will probably win their fight.

To show that the fee system is a form of spoliation, it is only necessary to quote the fees received by the sheriffs of New York County—men whose names are hardly known to the citizens of the city which they are supposed to serve. These men also receive salaries of $12,000 per year. Nicholas J. Hayes (1906-1907) received in fees $70,193.91, Thomas F. Foley (1908-1909) made $92,594.84 and John S. Shea (1910-1911) $95,623.91. To Julius Harburger (1912-1913) fell no less than $98,769.24 of fees. Max S. Griffenhagen made more than $71,000 last year. The total amount of fees retained by sheriffs in New York County from 1906 to 1914, inclusive—9 years—was $408,324.44.

Discussion By Readers

Recognition of Bravery

Letter No. 1—I have seen no replies to the invitation extended in COAL AGE, Jan. 16, p. 109, asking for suggestions recommending the adoption of some feasible and practical method of properly rewarding miners who risk their lives in performing deeds of heroism. Although I am not directly connected with the coal-mining industry, I am associated with it enough to be deeply interested in this question, and beg to offer a few words on the subject.

Deeds of heroism in and about a coal mine are, as a rule, given little consideration and quickly forgotten, because it is generally assumed that such acts are a part of a miner's calling and he is expected to face all dangers without a thought for his own personal safety. The fact has been proven many times that the miner himself does not know such a word as "falter" or "hesitate" when called to sacrifice his own safety, or when there is a service to be done for others in danger. In time of trouble or danger, the self-interest of a true miner disappears and he faces death as bravely as does the soldier on the field of battle.

The question of making adequate recognition of exceptional courage exhibited by the miner in times of peril, presents two aspects in working out a practical plan of operation. First, let us ask, would it be advisable to set a standard of *degrees of courage*, or would it be better to bring all worthy acts under one general classification? Second, Should the reward be entirely honorary in all instances, or conditioned to suit the rescuer's own physical condition when that is permanently impaired?

Many of our larger cities have honor rolls of brave firemen and policemen. In the city of Chicago, today there are two separate funds maintained for the recognition and commendation of heroic work. One of these is called the "Lambert Tree Fund" and is so named in honor of its founder, Mr. Tree. The other is supported by the self-styled "World's greatest newspaper," the Chicago *Tribune*. Each year medals are awarded and recognition bestowed on deserving ones, who are selected by a board of judges, acting for each of these funds. In making their recommendations the board of judges considers three grades of classification; namely, commendation, honorable mention and honorable mention with recommendation for a medal.

COAL AGE is certainly to be commended for having taken the first step in an effort to extend the warm hand of friendly recognition to the brave men who face danger and death for their imperiled fellows in the dark recesses of coal mines. Without doubt the suggestion will receive the hearty support and coöperation of the larger coal-mining companies and men of the coal industry, who appreciate and understand what individual volunteered bravery means in and about the mines. No vast sum is required to accomplish the desired result, and I firmly believe the idea will be well received and liberally supported by everyone in the coal-mining fraternity. Let an authoritative and permanent record at least be made of the many brave rescues that have been already made, and thereby perpetuate heroic deeds in coal mining.

BYKEM.

Joliet, Ill.

Letter No. 2—In the foreword that appeared in COAL AGE, Jan. 16, p. 109, a suggestion was made in regard to providing in a suitable manner for the recognition of the acts of bravery and heroism so often displayed, not only in mine-rescue work but in the humble performance of the daily duties of miners and all mine workers.

I want to say that I consider your suggestion in this regard a most worthy one. I believe that such recognition would go far toward increasing the efficiency of rescue work, by stimulating the desire on the part of mine workers to render every aid in their power in an emergency or at times of danger to fellow employees.

Following your suggestion, which I regard as a timely one, I have taken some steps to obtain an expression of opinion in regard to the form such recognition of brave acts and heroism on the part of mine workers should take. I would like to ask if we understand that the columns of COAL AGE are available for the frank and full discussion of this subject by its readers, and the free expression of their opinions in regard to the same.

Such a discussion would undoubtedly develop many good ideas and eventually make known the best course to be pursued in such an important and worthy undertaking, in order to bring about the greatest good to the industry. I believe this could be handled to advantage in a way similar to the question "Who Gets the Promotion?" which recently appeared in COAL AGE and attracted such wide interest and attention.

I. R. PACKARD, vice-president,
Harper Coal & Coke Co.

Bates, Ark.

[It is the desire of COAL AGE to obtain a full and frank expression of opinion from all its readers who are interested in this important matter. We hope, thereby, to work out eventually a plan that will make suitable recognition of heroism and bravery in mining work. The purpose should be to stimulate in the minds of *all* a generous disregard of personal safety in times of danger, whenever there is a reasonable expectation of aiding and rescuing others.

Such recognition should not be regarded in the light of a *reward* for action that is incumbent on every fellow workman. To the right-minded, the faithful performance of duty is its own reward. Few who are willing to risk their own life in an effort that bids fair to save another's would consider accepting a reward for their deed. Deeds of heroism are too costly to be purchased.

We hope for a discussion of this question that will bring splendid results, and COAL AGE invites all its readers who are interested to lend their aid to this end.—EDITOR.]

Mining Laws, Legislation and Mine Regulations

Letter No. 35—In connection with the dangers attending the operation of mines in the same territory with oil and gas wells, mentioned by D. W. S. COAL AGE, Jan. 30, p. 216, I thought it would be of interest to give a brief summary of the Ohio law, which is headed "Relating to Oil and Gas Wells Through Coal Measures" (Mining Laws of Ohio, 1914, pp. 107-112) and reads as follows:

Sec. 973. Any person, firm or corporation causing to be drilled any well for oil or gas, or elevator well, or any test well within the limits of any coal-producing county of this state must give notice, in writing, of such fact to the chief inspector of mines, stating the location of the land upon which such well is to be drilled.

The law further requires that the parties shall make or cause to be made an accurate map, on a scale of 1 in. to 400 ft., showing the location and number of wells, property lines, township, section and quarter section in which the well is located, together with measurements from the section and quarter-section lines. The map must be accompanied with the sworn statement of the person, firm or corporation making the same and must be kept on file in the office of the state mining department and be open for inspection by the public at all reasonable hours. The owner or surveyor shall retain the original map, but a blueprint copy must be furnished the chief inspector of mines and another copy filed with the recorder of the county where the well is located, within 60 days after commencing to drill. If the drilling is continued a complete blueprint copy of the map must be filed at the end of each year. The law continues:

No oil or gas well shall be drilled nearer than 300 ft. to any opening to a mine, used as a means of ingress or egress for the persons employed therein, nor nearer than 100 ft. to any building or inflammable structure connected therewith and actually used as a part of the operating equipment of said mine.

In the event that a well being drilled for oil or gas penetrates the excavations of any mine, it must be cased with casing of approximately the same diameter as the diameter of the hole, the hole to be drilled 30 ft. or to solid slate or rock and not less than 10 ft. below the floor of such mine; and the casing shall be placed in the following manner: One string of casing shall be placed at a point above the roof of said mine so as to shut off all of the surface water and then the hole drilled through said mine and another string of casing put in, and the bottom of the second string of casing or the one passing through said mine shall not be nearer than 10 ft. nor more than 30 ft. from the floor of the mine where it passes through the same.

When abandoning an oil or gas well that has penetrated a mine from which the mineable coal has not all been removed the law provides that:

* * * The person, firm or corporation owning said well shall leave in said well the casing passing through said mine from a point not less than 10 ft. nor more than 30 ft. below the floor of said mine and extending above the roof of said mine 5 ft.; and a seasoned wooden plug or iron ball shall be driven to a point 40 ft. below the floor of the mine. * * *

The hole must then be filled with cement to the top of this casing and, after driving another iron ball or seasoned plug, cement must be again filled into the hole to a depth of not less than 20 ft.

If the oil or gas well to be abandoned has penetrated *two or more* workable seams of coal a seasoned wooden plug or iron ball must be driven to a point 30 ft. below the lowest workable seam of coal, and the hole filled with cement to a point 20 ft. above the upper seam, when another wooden plug or iron ball must be driven and the hole filled with cement for a distance of 20 ft. more.

The law concludes:

When any oil or gas well is to be abandoned, the person, firm or corporation having drilled or operated such well shall notify the chief inspector of mines, at least 10 days in advance, so that he may direct one of his district inspectors to be present at the time of abandonment.

It will be seen from the above quotations that not only are owners of property required to give written notice of wells to be drilled or abandoned, but they must also make and file an accurate map showing the exact location of the wells on the property and file copies of the same with the state inspector of mines and the recorder of the county; and when drilling is continued a yearly report must be made showing the number and location of each well drilled.

Referring now to Mr. Weigle's suggestion that the mine foreman should be a state official, COAL AGE, Feb. 13, p. 302, in my opinion, there are many objections to such a procedure. Without discussing the legal difficulties that might be encountered but which could be easily overcome if it were desired, I will simply state my objections, which are as follows:

1. I believe the control of a mine foreman placed in charge of a mine should rest, in part at least, with the company or owner of the mine and not with the state, whose interest in the operation of the mine relates to safety alone.

2. I do not believe the state should dictate or control the selection of a mine foreman to be placed in charge of a mine that it does not own or operate.

3. State control might lead to term service, which would be a disadvantage in the operation of a mine.

These objections are made in full recognition of the dual capacity of a mine foreman, who must act both as safety inspector and coal producer.

There are, however, other duties devolving on the foreman that have no relation to *safety of operation*. For example, in order to maintain the output of the mine at its full capacity, the foreman must plan its future development. In these plans, as well as in the details of operation, *economy of production* is an essential factor; and the foreman in charge must be a man who understands the details of the work, the ordering of needed supplies and the economical management of men, in order to give satisfaction to the operating company or owner.

In all these respects, the state has no concern. The state already employs the mine inspector to look after the safe operation of the mine and to see that the law is obeyed. In my opinion, the selection of the mine foreman and his control should be wholly in the hands of the operator or owner of the mine.

Assuming for a moment, however, that the mine foreman is or should be a state official, we are confronted at once with difficulties relating to his appointment. There is, already, much diversity of opinion in respect to the manner of selection of mine inspectors; and the question arises, "Would the mine foreman, as a state officer, be *appointed* by the governor or *elected?*" In any case, it would be difficult to secure a man who would be satisfactory to the company or the mine owner. There is material difference in the policies of different companies and mine operators, which would still further increase the difficulty.

There is no question but that the examination and certification of mine foremen as to their capabilities tend to greater competency in the operation of mines as well as provide a greater degree of safety. From among such

certified men, the operator or company can best select the man suited to their needs. In making this selection, an important consideration is the familiarity of the candidate with the conditions existing in the particular mine of which he may have charge. Any selection for this office, by the state, could not satisfactorily determine this qualification.

Mr. Weigle suggests further that the removal of a mine foreman should only be possible after he had been given a fair trial by "an executive board composed of at least two district mine inspectors and one member of the operating company." This suggestion virtually takes from the operator all power to dismiss a mine foreman from his employ, since the majority vote of the board would be in line with the state's interest. In other words, the owner or operator of the mine would be prevented from removing a mine foreman, which they might desire to do for economical reasons; but would be forced to operate under conditions that were not economical. Again, on such a plan, a mine foreman with the support of the inspectors could safely oppose the plans and wishes of the operating company who would be powerless to discharge a man simply for poor management or uneconomical methods. He would be forced to see his cost-sheet eat up his reserve.

However, it hardly seems fair to criticise this suggestion without offering a substitute. The method that appeals to me most strongly is to hold the operator responsible for any failure to enforce the mining law in the operation of the mine when it appears that he is rightly to blame and to impose a heavy penalty for such failure. The orders of the mine inspector might be written in duplicate—one being given to the foreman in charge and the other to the operator. It might be further provided that any order given to a mine foreman that is plainly in conflict with the mining law should be made in writing and duly signed by the superintendent or operator. Such written order would shift the responsibility from the shoulders of the foreman to the responsibile party or parties, in case any action resulted therefrom. In the absence of such a written order, the mine foreman would be regarded as responsible for any violation of the law in matters in his charge. By this means, responsibility would be placed where it rightly belonged, and neither operator nor foreman could shift the blame, but every man would shoulder his own load and suffer for his own act.

GEORGE N. LANTZ.

New Straitsville, Ohio.

Safety Hints

There appeared in COAL AGE, Oct. 24, p. 676, an editorial entitled "Safety Hints." After stating what railroads were doing along this line, by means of committees appointed in each operating department, the belief was expressed that a similar system could be put in operation, with good results, at coal mines.

I am not opposed either to safety committees in mining or to the posting of danger signals in and about coal mines as a precautionary means of impressing the idea of safety on all mine workers. However, I greatly fear that the multiplicity of these signs, giving warning of unsafe places or conditions, may engender in the minds of many mine workers the idea that all unsafe places are properly marked and guarded, and that less care and precaution are needed on their part in protecting themselves in their own working places or where such danger signals do not appear.

In other words, too much reliance may be placed on the work of the safety committee or the mine foreman or fireboss, and too little care taken by the miner for his own safety. The habit of risking danger and postponing the doing of things that should be attended to at once has cost many a miner the loss of his life. Safety committees and mine foremen cannot be expected to be always on hand when danger is present; and the responsibility for his own safety must rest on the individual worker in the mine.

I have long felt that the best safety rule and method that can be adopted in coal mining is, *Train and discipline every mine worker to detect dangerous conditions and to know how to avoid or escape them.* It is important to impress strongly on the mind the danger of delay or of assuming unnecessary risks. I have observed, and statistics will generally show, that the percentage of accidents occurring in mines where danger signals are displayed almost everywhere is as high or higher than in mines where this system is not carried to such an excess, other conditions of course being similar. It will be generally granted that the percentage of accidents, under like conditions, will be less in proportion as miners have been trained to care for themselves by observing every precaution for safety, however insignificant the need of such precaution may appear.

The idea has gained some prevalence among miners that the mine foreman knows much more about mining than even good miners do themselves. It need not be stated that this is true only where the mine foreman is a good practical miner himself and a man of broad experience. Even in that case, however, the mine foreman should not be expected to be as well acquainted with the conditions in a working place as the miner who works there continually.

Another idea that has gained some prevalence is that long experience as a miner renders him immune from accident. Whatever his experience, the exercise of *precaution and constant vigilance* on the part of a miner is absolutely necessary for his safety; and experience of the proper sort should make this fact certain. Long experience will not keep a loose piece of slate from falling on a miner who neglects to keep away from under it and to set the necessary timber for its support. Long experience will not prevent a man from being run over by a trip of cars when he travels on a haulage road, in disobedience to orders. Long experience will not prevent a miner from being burned when he walks into gas with an open light. Indeed, *long experience will teach men the need of precaution and obedience to the rules and regulations of the mine.*

JOHN ROSE,
District Mine Inspector.

Dayton, Tenn.

Humidifying Mine Air

Letter No. 2—I was much interested in the inquiry of Miner, COAL AGE, Jan. 2, p. 29, and have read also the suggestions of Geo. Morris, to the effect that sufficient exhaust steam should be introduced into the intake current to produce a relative humidity of 93 per cent. in the live workings when the outside temperature is at or near the freezing point, COAL AGE, Jan. 16, p. 135.

The subject of humidifying the mine air has interested me greatly during the past few years, since the explosibility of coal dust has been so clearly demonstrated by many fatal occurrences. In this connection, it has been my good fortune to have had the opportunity of inspecting many devices and methods designed for the purpose of maintaining the degree of humidity in the mine air at or near the dew point so that the tendency will be for the air current to *deposit* rather than to *absorb* moisture in its passage through the mine.

The appliances inspected have included many types of apparatus, from the most elaborate systems for the injection of watery vapor into preheated air, to the more simple application of deliquescent chemical compounds to the haulage roads and intake airways. While many of these methods have given beneficial results more especially in the smaller mines, they have demonstrated to my mind that any apparatus that will produce and maintain a desirable percentage of moisture in the live workings of a mine, at all seasons, would be precluded by the necessary expense for the installation and upkeep of the system.

In this connection, I thought the following description of a device that is both simple and inexpensive and that has, in a number of observed instances, been entirely efficacious would be of interest. I would say, however, that this apparatus is designed for a mine operated on the blowing system of ventilation; and, since it must be installed on the intake, its adoption presupposes that the mine haulage is performed on the return airway. The description is as follows:

The device consists of a radiator composed of a series of 2-in. pipes hung from the roof in horizontal layers 10 in. apart. The first layer is suspended from the roof, while each layer below is hung from the one above it. The length of the radiator pipes will depend somewhat on the volume of air in circulation. For an air volume of 60,000 cu.ft. per min., a radiator 50 ft. long will suffice, while a 90-ft. radiator would probably be required for an air volume of 100,000 cu.ft. per min. The steam is introduced into the top layer of pipes, and, after passing successively through each of the lower layers, is discharged from the layer next to the floor, at the inby end.

By the operation of this device, the air current is heated to a temperature sufficient to enable it to absorb and carry into the mine all of the water in the exhaust steam, which is as much as can be asked or desired of any apparatus or device. The radiator is located a few hundred feet from the bottom of the intake shaft, slope or drift mouth.

FLAT TOP ENGINEER.

———, W. Va.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Example—Given the two sides of a right triangle to find the hypotenuse: Thus, altitude, a = 300 ft.; base, b = 400 ft.; to find the hypotenuse c and the other two angles A and B.

Solution—There are two methods to employ, which are as follows:

First Method—Substituting the given values in the formula previously given and transposed to give the value of c,

$$c = \sqrt{a^2 + b^2} = \sqrt{300^2 + 400^2} = \sqrt{250{,}000} = 500\ ft.$$

For the two unknown angles,

$$Sin\ A = \frac{a}{c} = \frac{300}{500} = 0.6; \quad \text{and } A = 36^\circ\ 52'$$

then,
$$B = 90^\circ\ 00' - 36^\circ\ 52' = 53^\circ\ 08'$$

Second Method—The angles may be first found, after which the hypotenuse is found by the law of sines or the law of cosines. There are two ways of finding the angles A and B, in this case:

1. By the law of circular functions:

$$Tan\ A = \frac{a}{b} = \frac{300}{400} = 0.75; \quad \text{and } A = 36^\circ\ 52'$$

or
$$Tan\ B = \frac{b}{a} = \frac{400}{300} = 1.333; \quad \text{and } B = 53^\circ\ 08'$$

2. By the law of tangents:

$$Tan\ \tfrac{1}{2}(B - A) = \frac{b - a}{b + a} = \frac{400 - 300}{400 + 300} = \frac{100}{700} = 0.1429, \textit{ nearly}$$

$$\tfrac{1}{2}(B - A) = 8^\circ\ 05'$$

Then, since for the half-sum of these angles, ½ (B + A) = ½ (90°) = 45°

$$B = 45^\circ\ 00' + 8^\circ\ 08' = 53^\circ\ 08'$$

and
$$A = 45^\circ\ 00' - 8^\circ\ 08' = 36^\circ\ 52'$$

To find the hypotenuse, now, apply either the law of sines or of cosines, as follows:

Law of sines, $c = \frac{a}{sin\ A} = \frac{300}{0.6} = 500\ ft.$; or $\frac{b}{sin\ B} = \frac{400}{0.8} = 500\ ft.$

Law of cosines, $c = \frac{a}{cos\ B} = \frac{300}{0.6} = 500\ ft.$; or $\frac{b}{cos\ A} = \frac{400}{0.8} = 500\ ft.$

Example—Again, taking the same triangle, and given one side and either angle; thus, given a = 300 ft. and A = 36° 52', to solve the triangle.

Solution—Whether the given angle is adjacent or opposite to the given side the same method of solution can always be applied, since the other angle is 90 deg. less the given angle.

$$B = 90^\circ\ 00' - 36^\circ\ 52' = 53^\circ\ 08'$$

$$b = a\ tan\ B = 300 \times 1.333 = 400\ ft.$$

$$c = \frac{a}{cos\ B}; \text{ or } \frac{b}{sin\ B}; \text{ or } \frac{b}{cos\ A}; \text{ or } \frac{a}{sin\ A}, \textit{ as before.}$$

The Coal Age Pocket Book

Example—Again, taking the same triangle as above, and given c = 500 ft. and A = 36° 52', to solve the triangle.

Solution—The other angle, found as above, is B = 53° 08'

Altitude, $a = c\ sin\ A = 500 \times 0.6 = 300\ ft.$

Base, $b = c\ cos\ A = 500 \times 0.8 = 400\ ft.$

Or, since in any right triangle, sin A = cos B; and sin B = cos A,

Altitude, $a = c\ cos\ B = 500 \times 0.6 = 300\ ft.$

Base, $b = c\ sin\ B = 500 \times 0.8 = 400\ ft.$

Formulas for Use of Logarithms—When using logarithms, in the solution of triangles, it is desirable to have a formula that avoids as much as possible the addition and subtraction of terms. This is possible in Case 4, where the three sides only are given. For example, denote the half sum of the three sides by S; or say S = ½ (a + b + c) and we obtain

$$Sin\ \tfrac{1}{2}A = \sqrt{\frac{(S - b)(S - c)}{bc}} \qquad (1)$$

$$Cos\ \tfrac{1}{2}A = \sqrt{\frac{S\,(S - a)}{bc}} \qquad (2)$$

$$Tan\ \tfrac{1}{2}A = \sqrt{\frac{(S - b)(S - c)}{S\,(S - a)}} \qquad (3)$$

The letters in these formulas, as previously stated, can all be changed correspondingly, as will appear in the following solution of the example in Case 4.

Example—Given the three sides of a triangle, as follows: a = 300 ft., b = 500 ft. and c = 700 ft.; to find the angles A, B and C.

Solution—Using the formula for the sine of the half angle, since S = ½ (300 + 500 + 700) = 750; S — b = 750 — 500 = 250; and S — c = 750 — 700 = 50; we have

$$Sin\ \tfrac{1}{2}A = \sqrt{\frac{250 \times 50}{500 \times 700}} = \sqrt{0.03571} = 0.1889$$

$$\tfrac{1}{2}A = 10^\circ\ 53\tfrac{1}{2}'; A = 21^\circ\ 47'$$

Again, since S — a = 750 — 300 = 450,

$$Sin\ \tfrac{1}{2}B = \sqrt{\frac{450 \times 50}{300 \times 700}} = \sqrt{0.10714} = 0.3273$$

$$\tfrac{1}{2}B = 19^\circ\ 06\tfrac{1}{2}'; B = 38^\circ\ 13'$$

It is well to remember that Formula 3, above, giving the value of the tangent will yield generally closer results for angles between, say 10 deg. and 60 deg. Below 10 deg., there is little practical difference between the sine and the tangent; and above about 60 or 70 deg., the value of the tangent becomes less and less definite.

Also, Formula 2 for the cosine should be used in preference to Formula 1 for the sine, for all angles between 45 and 90 deg. For angles less than 45 deg. Formula 1 or 3 is preferable.

Inquiries of General Interest

Purchase of Electric Power

At a mine purchasing electric power for the operation of its haulage motors and coal-cutting machines at the face, a 100-kw., direct-current generator is direct-connected to a 150-hp., 2300-volt, 60-cycle, three-phase synchronous motor, as illustrated in the accompanying diagram. If the generator delivers 50 kw. to the

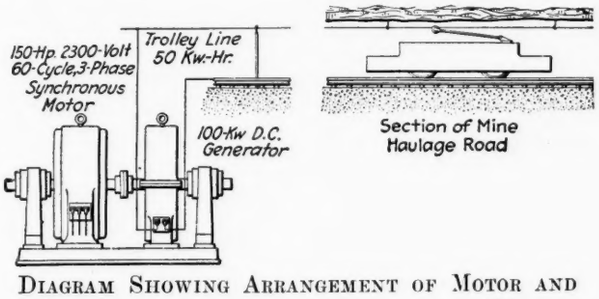


DIAGRAM SHOWING ARRANGEMENT OF MOTOR AND GENERATOR SUPPLYING POWER TO THE MINE

power line extending into the mine, for 10 hr., how many kilowatt-hours will the alternating-current motor take from the mains in that time?

ELECTRICIAN.

Handley, W. Va.

According to the above statement, the generator delivers $50 \times 10 = 500$ kw.-hr. to the trolley line. Then, assuming an efficiency of 90 per cent. for the generator and 90 per cent. for the motor, the latter takes from the mains, in the same time, $500 \div (0.90 \times 0.90) =$ 617.28 kw.-hr. The combined efficiency of the generator and motor, in this case, is 81 per cent.

Pick vs. Chain Machines

I am desirous of ascertaining in what parts of this country mining machines of the pick type are most largely used. Available statistics do not mention the type of machines used. Kindly state, also, whether the increased use of the chain type of coal-cutters is due to the fact that they use electric power or is it due to any general preference on the part of miners for chain machines? What objections, if any, have been made to the use of pick machines, in the mining of coal? I shall appreciate any information you can offer on the subject.

CHAS. O. PALMER.

Cleveland, Ohio.

In regard to the use of these machines, respectively, it may be stated, in a general way, that pick machines are employed most largely in sections of Illinois, Indiana and Pennsylvania; but it is worthy of note that, at the present time, the records of these three states show a greater increase in the use of chain machines for cutting coal than any other state or district, except eastern Kentucky and West Virginia, which stand first in point of increase. Pick machines, however, never had much popularity in eastern Kentucky and West Virginia, for the reason that the chain machine of the side-cutting type was available for use at the time when the extensive development of the West Virginia field began.

The increasing use of the chain type of coal-cutter is due chiefly to three causes or conditions: 1. Chain machines are operated by electricity; and as electric power is now being so largely introduced into mines for the purpose of haulage, the adoption of the chain machine requires but one power installation for coal cutting and haulage.

2. It cannot be denied that there is a general preference for the chain type of machine, owing to its greater speed of cutting. The early type of chain cutter was a breast machine, which could make but one cut at a time and was little better, if as good as the pick machine. The introduction of the side-cutting, chain machine, however, made it possible to undercut an entire breast in a single operation, without withdrawing the cutter-bar from the coal. This greatly increased the speed of cutting coal with the chain type of machine; and, in this respect, made it superior to the pick machine.

3. The side-cutting machine, of which the "Ironclad" is a good representative, is much more flexible and easy to handle than the old breast type of chain cutter and is adapted to a much larger range of conditions.

It may be stated that a chain breast machine, under favorable conditions of roof and floor, will cut about twice as much coal as a pick machine, in the same time. The recorded results of coal cutting show that an "Ironclad," continuous coal-cutting chain machine cuts double the quantity of coal previously cut by a breast machine having the same length of cutter-bar, in the same time. An important feature of the "Ironclad" is that it permits the use of a considerable length of cutter-bar. Bars 10 ft. 4 in. long are in successful use in a number of mines today, while the present capacity for depth of cut of the pick machine does not exceed 5½ or 6 ft.

Correspondent will find much information on machine mining, including the number of each type of machine in use for a number of years, in the annual report, U. S. G. S. for 1913, by E. W. Parker, p. 759. In this connection, we would draw attention to an interesting paper entitled "Some Recent Developments in Electric Coal Mining Machines," by S. B. King. This paper was read at the New York meeting of the American Institute of Mining Engineers, February, 1914. It gives an interesting chart or diagram showing the total number of coal-mining machines in use; percentage of coal mined by machine; compressed-air pick machines; electric machines and all types in use; and continuous-cutting, electric machines to 1914. Copies of the paper can be obtained from the secretary of the institute.

Examination Questions

West Virginia Mine Foremen's and Firebosses' Examination

(*Selected Questions*)

Ques.—What are the chief points to be considered in establishing and maintaining substantial and reliable ventilation in coal mines? Should the circulation of air in mines be made continuous and not during the day only?

Ans.—The ventilating equipment of a mine should be such as to provide an ample supply of air throughout the mine at all times. If the mine is particularly gaseous, it is well to provide a duplicate fan for alternate or emergency use. Careful attention should be given to the question of whether the mine should be ventilated on the exhaust or the blowing system, which will depend on the conditions in the mine. The mine should be divided into separate ventilation districts, each district being supplied with its own air split taken from the main-intake current and returned directly to the main-return airway. By the use of regulators, the air should be distributed between the several districts according to their respective needs.

In general, the air should be conducted at once to the face or inby end of each district and returned from that point along the working faces to the mouth of the district where it joins the main return. It is important to hang canvas on the entries and at the mouth of each room so as to force the air current to travel the working faces. In many cases, it will be necessary to erect temporary brattices at the faces of the rooms as these are advanced beyond the last breakthrough in order to cause the air to sweep the working face in each chamber.

The circulation in a mine should be continuous, day and night, in order to make sure that there will be no accumulation of gas in cavities or void or abandoned places, for lack of a sufficient circulation of air during the night or on idle days. It may be possible, under certain conditions, to reduce the ventilation by running the fan at a lower speed during such time; but this should only be done after a careful inspection to ascertain the effect of such reduced ventilation on the condition of every place in the mine.

Ques.—How would you reduce accidents from falls of roof and slate at working faces? How would you prevent accidents from mine cars? Is it necessary for a miner to examine his working place after firing shots; and, if so, why?

Ans.—Accidents from falls of roof and coal at the face can only be properly guarded against by a thorough and constant inspection of the working faces throughout the mine while the men are at work and by seeing that a plentiful supply of needed timbers and cap pieces is kept on hand. It is also necessary to impress on every miner the absolute need of taking every precaution for his own safety and the danger incurred by taking unnecessary risks, or delaying the setting of timber for the support of the roof, until after loading out the coal.

To prevent accidents from the movement of cars in a mine, the track and rolling stock should be kept in good condition and constantly oiled and inspected. Separate traveling ways should be provided where it is necessary for men to walk in and out of the mine. It is a good rule to permit no one to travel on the main haulage roads of the mine, except those whose duties require them to do so. Where it is necessary to use a haulage road for travel, there should be provided a sufficient clearance on at least one side of the track to enable men to pass cars in safety. If this is impracticable, refuge holes should be provided at short intervals along the roadway, and these should be whitewashed and kept free of all obstructions. On gathering hauls, drivers should work together following each other; and in no case should they be permitted to alternate, one coming out after another goes in. Doors should not be placed at the foot of a grade. Where necessary to sprag cars in descending a grade, ample room should be left at the side of the road for the safe performance of the work. Cars should never be left standing on a haulage road and when standing on a siding should be properly blocked or spragged to prevent their running out or being knocked out onto the main track. Safety blocks should be placed at the head of all inclines used as haulage roads.

After firing a shot, a miner should never return to the face until sufficient time has elapsed for the air current to carry away the smoke and gases produced by the explosion. Where there is danger of gas feeders being ignited by the flame of a shot, suitable provision should be made for the inspection of the working faces by competent persons within a short time after the shots have been fired. The neglect to do this has frequently been the cause of disastrous mine fires.

Ques.—What tools should a miner have to properly timber his place?

Ans.—A miner should always have an ax, saw and sledge for use in timbering his working place.

Ques.—What means are necessary to properly conduct the air current to the faces of the workings? What are the advantages to be obtained by dividing the air current into separate splits? Should mine fans be built reversible?

Ans.—Canvas should be hung at the mouth of each room to prevent the short-circuiting of the air at that point. As the face is advanced beyond the last breakthrough, it is often necessary to erect a line of brattice from the outby corner of the last breakthrough and extend this to a short distance from the coal face so as to conduct the air to that point.

Splitting the air current provides a larger quantity of air in circulation by the same power. The ventilation in the mine is under better control, as the quantity of air in each district is proportioned to the need therein. Better air is supplied to the working face, and the smoke and gases in each district are conveyed directly out of the mine without passing through other districts.

Mine fans should be built reversible at all gaseous mines. At such mines occasion is liable to arise when the reversing of the air will be necessary.

Coal and Coke News

Harrisburg, Penn.

To the surprise of everybody, members of the Senate clashed bitterly on Feb. 16 over the Catlin Mine Code (160) when it reached the third reading in the Senate. A motion by Senator Thompson of Beaver to have the bill placed on the postponed calendar brought a strong objection from Senator Catlin and for a few minutes the chamber was thrown into the greatest excitement since the opening of the Legislature. The Thompson motion was carried by a vote of 24 to 15.

As far as the final success of the bill goes, the coal operators' victory it is thought means nothing. The bill is on the calendar and may be called up any time by Senator Catlin for a vote. There seems to be a strong feeling that the code will eventually secure the constitutional 26 votes, for many who voted for the Thompson motion did so on the usual "senatorial courtesy" ground rather than with the scheme of delay.

The Catlin bill has smashed all records and precedence for quick action in the usually slow and deliberate Senate. The bill was only introduced recently, and this argument was used by the operators' agents in canvassing the Senate for the purpose of having the bill recommitted to the committee for a chance to give the vested interests time to consider the measure, which is radical. They failed to induce the Senate to move to recommit and had to be satisfied with the postponed calendar.

Fourteen sections of the anthracite law are modified by Senator Catlin's bill. One of the sections of the present law is amended giving the operators of mines the right of free selection of foremen. This breaks up the practice of coal companies going behind the mine foremen when an accident occurs. By this amendment coal companies will hire employees and not mine foremen, or at least the companies will be held responsible for their foremen. The Supreme Court has held on repeated occasions that the operator is not to blame for the neglect of duty of a mine foreman. Unless the bill goes through, the miners claim, no workmen's compensation act will affect the anthracite miners.

It is stated, that the United States Bureau of Mines is behind one of the amendments.

It has been agreed that a hearing on the Catlin bill be given the operators and miners on Tuesday, Mar. 2, at 2:30.

Would Compel All-Steel Cages

Representative Dawson is the author of a bill introduced in the House to eliminate wooden cages in mine shafts where men are raised and lowered. It would substitute for the wooden cages all-steel cages, with wooden plank floors and would make it a misdemeanor for mine foremen, etc., to use any other construction, in the anthracite region.

The Dawson bill is the result of the agitation for greater safety that started at the time 13 men were killed when the bottom of the mine carriage at the Diamond Shaft in Scranton suddenly and mysteriously dropped away.

Mr. Dawson is a mine operator himself, and is manager of the Clearview Coal Co. in North Scranton, and has the distinction of being the first and only superintendent to anticipate the law in this respect.

A bill to regulate the use of lamps in bituminous mines was introduced on Feb. 15, by Representative Myers. The bill makes it unlawful to use any lamp in a bituminous mine, other than a portable electric mine cap lamp of the style or type approved by the Federal Bureau of Mines. An ordinary gas testing lamp known as a safety lamp may be used as directed by the chief of the Department of Mines of Pennsylvania, only for the purpose of examining working places and for testing the gaseous conditions of air currents in the mine.

The portable electric mine cap lamp may be used only when they comply with the standard of requirements as stated in the bill.

The bill provides for a fine of $25 for failure to comply on first offense, $100 for second and a jail sentence of one year or both on third offense.

Certified Miners in the Bituminous Field

Senator Burke has introduced a bill to provide for the examination and prohibit the employment of incompetent persons as miners and providing penalties for the violation of same in bituminous mines.

The Burke bill provides that no person shall be employed as a miner in any bituminous mine in the state until he shall have first obtained a miners certificate of competency and qualification, from a "miners examining board" of some county of the state. Provided that any miner actually employed when the act becomes effective who has been employed as a miner at least two years in the mines shall be entitled to a certificate permitting him to work as a practical miner. The bill also provides that any certified miner may have one uncertified person working with him and under his direction for the purpose of learning the business of mining and for the purpose of obtaining a certificate in conformity with the provisions of the act. It also states that in cases where a miner holds a certificate and has two or more sons who do not hold certificates they shall have the right to work with him if he so desires.

Senator Croft has introduced a bill relating to the manufacture, keeping, storage and transportation of explosives and providing for any violation of the act.

Representative Powell, has introduced a bill in the House providing for an increase in pay for the several boards for the examining of candidates for Mine Inspector.

Representative Evans has introduced a bill regulating the sale of liquors, etc., making it unlawful for any saloon to be open between the hours of 11 p.m. and 8 a.m., the primary object of which is to compel saloon keepers to close while miners are on their way to work, and stop all night carousing, which is in line with the movement started by many of the anthracite operators.

Representative Kitts has introduced a bill to compel employers to publicly advertise in newspapers or by posters or otherwise if they have a strike or lockout on their hands when soliciting employees.

Representative C. J. Roney, chairman of the Ways and Means Committee, and sponsor of the anthracite coal tax, is discussing a proposition to place coal companies under the control of the Public Service Commission on the ground that they are purveyors of a utility. Just what will be done about it is not known but it is thought that a bill will be prepared and shown to the Governor.

Amendment of the act imposing a tax of 2½ per cent. ad valorem on anthracite is likely to be made by the present Legislature, and not repealed as asked for by the Ramsey bill. It is thought by amending the act, it will restore the measure to the form in which it was drawn by Attorney General Brown, who was counsel for the commission to consider and report upon a revision of the corporation and revenue laws.

The bill as drawn by Attorney General Brown was amended on its passage through the house. No amendment has as yet been suggested which will relieve the consumer of coal from the tax burdens.

That the Corporation and Revenue Commission in framing the bill realized that the burden of taxation would fall ultimately on the consumer is revealed by this clause in its report: "We (Pennsylvania) have a monopoly on anthracite coal, and it must be taken from us by those who consume it. Bituminous coal is produced in many other states, and a tax upon it would not be passed on to the consumer. The price would be regulated still by competition with other states where no such tax is laid, and would be in effect, merely an increase of the tax on land."

Mr. Ramsey declares that his sole reason for seeking to annul the tonnage tax is that the coal companies have made an asset of the tax, and are extracting from the people of the state 25 cents for every 6 cents of tax imposed.

Mr. Roney states that the study of coal prices is coordinate with the proposition which Mr. Ramsey has put before the Ways and Means Committee, and that he will look into the charters of several of the coal companies before taking any definite steps.

PENNSLYVANIA

Anthracite

Wilkes-Barre—An explosion of gas in the Prospect Colliery of the Lehigh Valley Coal Co. occurred on Feb. 17, resulting in the death of 12 persons. At last report two others were in a serious condition at the City Hospital, while one was unaccounted for.

Shamokin—Frederick Dornsife and other prospectors on Feb. 18 discovered a 12-ft. bed of anthracite near Dornsife. For several months prospecting for coal has been conducted in this region, which is primarily an agricultural center.

Scranton—Although the state and most of the large coal operators in the anthracite mining region are devoting much time and money to the education of mine workers, the Y. M. C. A. of Scranton has not stopped offering facilities to the ambitious who wish to study to advance themselves. The mine foremen's class in this institution is 12 years old and there are now 11 men in the class and 25 in the preparatory class leading up to the course.

Lansford—Two steam shovels are now in operation in the swamp between Lansford and Coaldale in removing the huge culm banks.

Bituminous

Republic—On Feb. 19, the Tower-Hill Connellsville Coke Co. landed another large contract for coke and ordered that 200 additional ovens be fired at once. There are already 130 ovens in operation and those ordered fired will increase the force of workmen more than 200 men. No. 2 plant which has more than 300 ovens will probably be fired shortly.

Butler—On account of increased orders and general stimulation in the coal trade, a number of additional trains have been placed in commission on the Bessemer & Lake Erie R.R., with prospects that additional trains will be ordered before long. Greater activity in the mills in the Pittsburgh district is making necessary an earlier than usual start in ore traffic and a number of train crews which have been idle for months have been ordered to report for duty. It is thought that by the first of March hauling of coal and ore on the Bessemer will require the services of a large number of additional crews. On Feb. 18, officials of the road stated that they are preparing for one of the biggest coal and ore carrying seasons in the history of the road.

West Brownsville—An unsuccessful attempt was recently made to fire the coal tipple of the Lilley Coal & Coke Co. a short distance from West Brownsville Junction. This is the second attempt made within four months to burn the tipple, and officials of the company are seeking the incendiary.

Star Junction—The Washington Coal & Coke Co. recently issued orders for the firing of 100 ovens at the Star Junction plant. When these are in operation, 700 ovens out of a total of 1000 will be working; 50 additional ovens are to be fired at an early date.

Connellsville—Orders were issued by the H. C. Frick Coke Co. for firing 418 additional coke ovens on Feb. 22. These ovens are at plants in Fayette and Westmoreland Counties, and make a total of 3773 since the increased production began somewhat over two weeks ago. W. J. Rainey has also placed 50 ovens in operation at the Royal Works. This makes 350 active ovens out of 375. Conditions at all plants of this company are now approaching normal.

Altoona—Ten miners were killed and 51 injured in the 10th Pennsylvania District during 1914, according to the report of Mine Inspector Joseph Williams. In the district there were 51 mines, and 4,386,738 tons of coal were produced by 7000 men and boys.

WEST VIRGINIA

Charleston—Romeo Campi and John H. Riley, firebosses at the Carlisle Mine of the New River Coal Co. were fined $50 each recently when tried before Justice Samuel Jasper on the charge of negligence in connection with the recent explosion which cost 21 lives. The firebosses' certificates and also that of foreman Pilkington who was in charge of the mine at the time, were revoked by the State Department of Mines.

Newburg—The mines of the Virginia & Maryland Coal Co. have been closed as the result of a disagreement over wages between the miners and the officials of the company. About 75 per cent. of the miners are idle as the result of this strike.

Grafton—Over 900 miners employed by the Jamison Coal Co. went on strike Feb. 18 in the Farmington-Barracksville region following a disagreement over a new wage scale.

Huntington—Representatives of the State Fish and Game Commission are prosecuting a case against four officers of the United States Coal & Oil Co. on the charge of pumping mine water into the Guyan River and thus destroying the fish. The maximum fine for a violation of this kind is $100.

Montgomery—All the Minden Mines are now in operation, the last one having resumed recently. Full time is now promised for an indefinite period.

KENTUCKY

Lothair—The Kentucky Jewel Coal Co. has increased its shipments from 800 to 1200 tons daily, and has employed a goodly number of extra men. It plans other increases by May 1.

Hazard—The Himyar Coal Co. here announces an increase in the coal tonnage from 600 to 1000 tons daily beginning Mar. 1, and the opening of an additional mine.

Madisonville—Coal business is reported as picking up and the mines at Coiltown, this county, have resumed operations with 100 miners, after a shut-down of three months. Reports from the surrounding section are to the effect that similar resumptions are in order.

Central City—Several hundred miners in the employ of the Central Coal & Iron Co. were thrown out of work when the mines of the company were closed down on Feb. 20 for an indefinite period. S. J. Gish, president of the company and of the McHenry Coal Co., said that his companies were seeking an agreement with the United Mine Workers of America whereby any differences that may arise hereafter may be submitted to arbitration.

Henderson—Local business men are very much interested in reports that the deal by which the Deep Water Coal Co. would acquire title to the greater part of the mineral land in this section of Kentucky is to be concluded in the next few weeks. It is understood that the abstracts and titles involved have been completed and proven and that H. F. Allen, president of the Deep Water Co., is now in the East where he is finishing up arrangements to finance the project. The deal would involve millions of dollars and be of much benefit to Henderson and Webster counties where most of the land lies.

Pikeville—Coal operators, the Chesapeake & Ohio R.R. and others are behind a movement looking toward the establishment of a modern hospital here. The new institution will be incorporated and will have $5000 capital. L. L. Stone, president of the Pikeville Light & Power Co., makes the announcement.

Straight Creek—The Continental Coal Corporation is to develop two new mines on Straight Creek and will remove its tipple and power plant to the new location, constructing 3000 ft. of railroad spur at a cost of $12,000 to tap the advanced work at the old mine. The company's daily output is 1000 tons and its holdings 1000 acres. F. B. Martin is president and W. L. Moss, vice-president and manager.

Whitesburg—Representative land owners, miners and lumbermen in eastern Kentucky are to assemble in Ashland, Ky., early in March to take steps looking toward conservation of the timber of this section, especially in Letcher, Knott, Perry and Pike counties, which are frequently ravaged by forest fires.

OHIO

Athens—Three of the mines of the Sunday Creek Co., located at Rendville and Jobs, have resumed operation after a long idleness. This tends to relieve the distress among the miners of that section. Word has been received in Columbus that no more donations are needed there.

Steubenville—Suit has been brought against the Blyth Coal Co., by John Blyth asking judgment for $42,000 and that a receiver be appointed for the mining property at Brilliant. This judgment was asked on a mortgage, Blyth alleging that the defendant had neglected to take any steps to preserve the property, which is being damaged by sulphur water.

St. Clairsville—The Purseglove-Maher Coal Co. has begun the shipment of machinery from the Belmont County mines to the corporation's new works in Logan County, W. Va. It is said that the firm will abandon its mines in this section because of strike troubles.

INDIANA

Petersburg—A St. Louis syndicate has leased 640 acres of coal land in the Sugar Ridge neighborhood, south of here, and, it is announced, will begin surface mining in the spring. Tests are said to have shown beds of superior coal 8 to 10 ft. thick at a depth of 28 ft. The landowners are to receive $75 an acre, the operators permitting them to remove improvements.

Sullivan—The Union mine has suspended operations, due to the depressed condition of the industry. The Rainbow mine at Caledonia closed some time ago for similar reasons.

Indianapolis—The progress of the attempted coal legislation of the Indiana Assembly now in session is as follows: The shotfirers bill, aiming to make the operators pay the cost,

passed the house and is resting in the senate, with the chances aginst it. The bill for state ownership of certain mines in order to supply with coal state institutions is resting in committee, from which it may be slow of exit. The bill for codification of the mining laws of the state passed the senate and is in the house. It has its friends there. The bill to prevent strip mining has not yet been reported out of the committee to which it was referred. It may not be during the busy remaining two weeks of the session.

Brazil—The Kokomo mine, near here, which was allowed to fill with water, is being pumped out, so that it may be inspected for prospective purchasers. Owners of the mine have 1300 acres of good coal land adjoining. Plymouth No. 1 mine belonging to the Coal Bluff Mining Co. has closed down indefinitely and the electrical machinery has been removed. This puts out of employment about 300 men, most of them residents of Brazil, the center of the block coal district. The Crawford Coal Co. which recently added two new mines to its properties has scarcely had opportunity to operate them. It stands ready to put on 200 miners when the trade demands it. The Otter Creek Coal Co. has been one of the fortunates, having operated almost all season at nearly full time.

ILLINOIS

Odin—The Local Union of the Mine Workers has started a coöperative movement and equipped a grocery and supply store. It is stated that these men have succeeded in bringing about a substantial reduction in the cost of living.

Bryant—The opening of another coal mine between Bryant and Lewistown is in prospect, on land leased by John Long. Prospect drillings will begin at once.

Millstadt—The stripping operations at the High Prairie Coal Mining property near here are going on rapidly and it is figured that by July 1 this stripping proposition will have a daily output of 1500 tons.

Belleville—Operators in the Fifth and Ninth Districts of Illinois are trying to devise means whereby they can eliminate the destructive competition that has existed in the past in these fields and yet come within the law in the marketing of their coals. It is proposed to sell the output of all the mines on different roads to one producer or jobber in St. Louis on a contract basis. This would mean about 10 distributing companies but this arrangement will probably never be consummated. In the opinion of outsiders, who are impartial to the local situation, the only solution of the problem will be the bringing under one head of all the mining operations in the two districts with the allowance of a switching charge to the railroads entering East St. Louis which control their own mining properties. Destructive competition will always exist until the industrial railroad proposition is taken care of. This one feature alone prevented the formation of a syndicate, during the past summer, to take over all the mines in the Fifth and Ninth Districts.

Sparta—Serious trouble confronts the miners' organization at this point on account of miners from several of the idle mines insisting that the miners divide with them the working time at the mine of the Illinois Fuel Co. here. This mine runs three and four days a week and the regular miners insist upon working their full time. The tonnage of some of these local mines was removed to Percy and Willisville by the operating company, with the result that nearly one half of the mining population of Sparta is nearing a crisis.

Winkle—On orders supposed to have been issued by the State Board of the United Mine Workers, the mine here has been closed down for an indefinite period of time. This is one of the largest coöperative pits in the southern Illinois field and investigation developed the fact that the miners were receiving 38c. a ton and often less for mining coal off the solid where the regular scale is about 60c. to 62c. Competition against this wage was impossible by operators paying the full scale to their miners and men, it is understood, who worked in operator's mines, that could not compete against the coöperative pit, declared their intention of seceding from the union unless the coöperative mines were closed. There is much ill feeling on both sides in union circles.

MISSOURI

Rich Hill—Five miners were killed by a mine explosion at the workings at the Atlas Coal Mining Co. near here Feb. 18. These men had just entered the drift to begin work when the explosion occurred. No one else was in the mine at the time.

COLORADO

Denver—Payment of strike benefits to union miners in Colorado will shortly cease according to an announcement by John McLellan, president of District 16, United Mine Workers of America. The organization will continue to supply the necessities of life to the most needy ex-strikers, but payment will not be in the form of regular strike benefits. Strike benefits which have been paid since April 1910 have reached a total of approximately $4,000,000.

WASHINGTON

White Salmon—White Salmon and Bingham are excited over the discovery of a coal bed. C. A. Rogers while drilling a well on the property of John Tamms at Bingham struck this coal measure. Options are being taken on the property in the vicinity.

PERSONALS

F. S. Peabody was recently elected chairman of the board of the Pennsylvania Coal & Supply Co. B. E. Schrage was elected treasurer.

Neil Robinson has been appointed receiver for the La-Follette Iron Co., of La Follette, Tenn. Mr. Robinson is also receiver for the La Follette Coal, Iron & Railway Co. of the same place.

James Mitchell, of London, head of Sperling & Co., promoters of the Alabama Power Co. and a party of financiers are expected to make a tour of inspection of the company property shortly.

Louis H. Smith, who has been connected with the Spring Valley Coal Co. for a number of years, was recently made General Manager of the firm to fill a vacancy made by the death of S. M. Dalzell.

George H. Meuller, assistant sales manager of the Jeffrey Manufacturing Co., has been made manager of the New York office of the company. He became affiliated with the Chicago office of the company in 1906.

Charles Cohenour, receiver for the Maple-Gallia Coal Co., is negotiating privately for the sale of the properties of the company, consisting of two mines at Nelsonville and Clarion, Ohio. The attempt to sell the properties at auction at the court house in Columbus failed because of lack of bids. Receiver Cohenour will likely ask the court to fix a minimum price at which they can be sold at private sale.

OBITUARY

Richard Fell, aged 69, retired mine operator in Shelby and Winston counties, Alabama, died recently. He came to Birmingham from Charleston, S. C., and operated mines in this state up to a few years ago, retiring on account of health.

Peter Dawson, a well known colliery operator with a mine at Stewartsville, west of Bellaire, Ohio, recently succumbed to heart failure in the city of Wheeling, being found dead on the street by a motorman. He is survived by a wife, two sons and one daughter.

Michael J. Finnegan, for 25 years secretary of the Central Coal & Iron Co., with offices at Louisville and mines at Central City, Ky., died at his home in Louisville, on Feb. 18, after a week's illuess of pneumonia. His wife, five sons and two daughters survive him.

William S. Thiesing, of Covington, Ky., 25 years old, a traveling expert electrician for the Goodman Manufacturing Co., Chicago, was recently killed in the mine of the Woolley Coal Co., at Paxton, Ind. He had just ended a trip of inspection of the motors in the mine, recently installed by his company and was crossing the tracks in one of the entries on his way to the cage, when he was struck by a string of cars making a running switch.

CONSTRUCTION NEWS

Athens, Ohio—The laying of track by the Hocking-Sunday Creek Traction Co. from Nelsonville to Athens has progressed to a point where the city of Athens has been reached. The line will tap a rich coal field.

Whitesburg, Ky.—The South East Coal Co. as a public improvement will build several miles of roads around the new

plant near Kono, Ky., in the Boone's Fork coal fields. The grade work is to start at once.

Marion, Ill.—The Illinois Central has built an extension from its Johnson City branch to the mines of the Big Muddy Fuel Co. near here, enabling that property to get it's coal into the West and Southwest.

Huntington, W. Va.—Workmen in the employ of the Lorain Coal & Dock Co. are now pushing work on the company's recently acquired field at Craneco, on Buffalo Creek. It is hoped that the work of mining will start by spring.

Herrin, Ill.—An extension of 3½ miles is now under way by the Illinois Central leading to Mine B of the Chicago-Carterville Coal Co., on the Franklin County line. At the present time the only connection with this mine is that of the Burlington.

Washington, D. C.—The appropriation of $350,000 for the Bureau of Mines Building at Pittsburgh was assured when the Senate on Feb. 20 passed the Sundry Civil Appropriation Bill. As soon as the President has signed this bill and the supervising architect of the treasury approves the plan, the work of construction will be expedited.

Paducah, Ky.—It is announced that on Mar. 1 the West Kentucky Coal Co. will begin construction of 27 coal barges for its own use at its Mechanicsburg plant. A contract let to the Langstaff-Orm Co. calls for 1,300,000 ft. of Oregon fir to be used in the barges which will be of the standard type used by the Pittsburgh Coal Co., 135 ft. in length, 26 ft. wide and 8 ft. in depth.

Edwardsville, Ill.—According to present expectations, work on the washer to be erected by the Mount Olive & Staunton Coal Co. will be begun in a few days. When completed this washer will handle coal from the Edwardsville, Staunton, and Mount Olive mines of the company. All are located on the main line or spurs of the Litchfield & Madison road, which passes close by the washer.

Pittsburgh, Penn.—The Pittsburgh, Chartiers & Youghiogheny Coal Co., which is controlled by B. S. Hammil, general manager of the Meadow Lands Coal Co. at Pittsburgh, has contracted with the Fairmont Mining Machinery Co. for a cable retarding conveyor about 600 ft. long and tipple equipment to be installed at Thornburg, Penn., on the Pittsburgh, Chartiers & Youghiogheny R.R., Thornburg being a suburb of Pittsburgh.

Steubenville, Ohio—According to an unconfirmed rumor, the Carnegie Steel Co. is contemplating the construction of a number of coke ovens at its Mingo mill. It is also rumored that the company has for a long time been seeking to cut down the heavy cost of transportation on its coke supply, and has at last conceived a plan which if carried out will reduce this expense. It is believed that the coke ovens will be erected on the company's property on the river front, south of the present works.

NEW INCORPORATIONS

Lexington, Ky.—Under amended articles of incorporation, the Kentucky Union Co. reduces its capital stock from $500,000 to $450,000. This company owns a number of coal and timber properties in the eastern portion of the state.

Dover, Del.—The Hillville Coal Mining Co. of Irwin, Penn., was recently chartered to acquire and develop coal mines. The capital stock is $50,000 and the incorporators are J. T. Davis, of Irwin, Penn., W. W. Kiehl, of Knoxville, Penn., A. W. Williams, of Fredell, Penn.

Charleston, W. Va.—The Catherine Coal Co. of Gilmer, was recently granted a charter. This firm has a capital stock of $20,000 and the incorporators are W. J. Colbern, of Burnsville, T. M. Bennett, of Glenville, J. B. Bolden, R. G. Walsh, and B. B. Truslow, of Charleston.

Terre Haute, Ind.—The Indiana Coal, Coke and Gas Co. was recently organized with a capital stock of $10,000. The purpose of the company is to operate coal mines, oil and gas wells, clay and other mineral deposits. The directors are Paul M. Bogart, Samuel D. Royse, M. E. Bradley, Leon Stern, W. J. Gillespie, John Duncan, and Ora D. Davis.

Marpleton, W. Va.—The Marpleton Coal Co. was recently chartered. It will have its chief works in Webster and Braxton Counties of W. Va., and is capitalized at $200,000. The incorporators are Theodore Switzer, of Plymouth, Penn., Joseph Bittenbender, Fred Bittenbender, Theodor Bittenbender, also of Plymouth, Penn., and L. O. Knipp, of Philadelphia.

INDUSTRIAL NEWS

Birmingham, Ala.—Fire did considerable damage recently to the infirmary of the Tennessee Coal, Iron & Railroad Co. at Ensley. The roof and second floor were burned, but the patients were removed to the first floor and were not hurt.

Kenton, Ohio—In an effort to break up a gang of coal thieves, Big Four R.R. police recently placed nine men and boys under arrest. The police claimed that thefts of many tons of coal at a time had been made, the fuel being sold.

South Bethlehem, Penn.—The second battery of 106 coke ovens, which are part of the 424 ovens being built at the Lehigh coke plant, were charged for the first time Feb. 19. The first battery of 106 ovens was put in operation about a week before.

Pittsburgh, Penn.—The Pittsburgh Coal Co. has authorized the sale of 11,530 acres of coal land to the Monongahela Consolidated Coal & Coke Co. for approximately $9,343,300. It is expected that the transfer and payment will be completed before July 1 next.

Baltimore, Md.—As the result of a wage dispute approximately 1000 miners went out on strike last week in Marion and Preston counties of West Virginia. Strikes are not of particular interest to the trade just now, because it is more of a question of disposal of product than one of getting coal to meet obligations.

Wellsville, N. Y.—The Kerr Turbine Co. announces the appointment of John S. Huey, 418 Hibernia Bank Bldg., New Orleans, La., as its district sales agent for the states of Louisiana and southern Mississippi. Mr. Huey was formerly connected with the Allis-Chalmers Co. and more recently with Woodward Wright & Co.

St. Louis, Mo.—At the engineering department of Washington University, the Smoke Abatement Committee of the Civic League is running tests on all kinds of fuel to determine which is best adapted to make St. Louis a smokeless city. All grades of bituminous, anthracite and smokeless coals as well as coke and briquettes are included in the list of tests.

Jeffersonville, Ind.—The Monongahela River Consolidated Coal and Coke Co. has reestablished its landing on this side of the Ohio River and is storing coal in barges a little above the city. The equipment had been moved to the Louisville side to let the high water scour out the harbor on this side, where the dead water due to the dam below the city tends to cause the harbor to silt up.

St. Louis, Mo.—According to the statistics compiled by the Merchants Exchange during the year 1914, there was received in St. Louis 8,051,088 tons of coal in 1914 against 8,925,579 tons in 1913 and 9,220,555 in 1912. The anthracite tonnage in 1914 was 174,694 tons. The anthracite for 1913 was 274,423 tons, showing a loss for 1914 of approximately 100,000 tons. Of the coal carrying roads, the Illinois Central led with a tonnage of 1,513,210 tons.

Toronto, Canada—The Canadian Freight Association, acting for the railways, has made application to the Canadian Board of Railway Commissioners for permission to make a general advance in freight rates—the proposed increase of coal freight charges is 10c. per ton. A similar application in November was refused. Coal companies are preparing to offer a strong opposition to the proposal, which it is understood will come before the Commission on Mar. 1.

Spokane, Wash.—Thousands of dollars are being poured from the Inland Empire into the Crows Nest district of British Columbia for coal which can be brought across the line for about 35c. a ton less than it can be hauled from Roslyn, on account of an alleged discrimination in rates, according to John Ryezek, manager of the Roslyn-Cascade Coal Co. The ultimate result it is alleged is that American miners are not getting as much money as they would if the rates were adjusted. The railroads are getting less for the haul from Canada, and the money goes to the Canadian miners.

Pittsburgh, Penn.—Coke requirements under contracts already closed are increasing somewhat. The Youngstown Sheet & Tube Co. will shortly blow in a third of its four stacks, taking a correspondingly larger tonnage on its two contracts made in December. The Allen Wood, Iron & Steel Co., of Philadelphia, is blowing in one of its two furnaces, to take coke on a contract made in November. The Buffalo Union Furnace Co. is blowing in an additional furnace, the coke being already contracted for. Nearly all the steel works are increasing their operations and shipping more coke from their own ovens.

Coal Trade Reviews

General Review

Anthracite steam sizes moderately active but domestic grades completely demoralized. Bituminous markets still crowded with coal. Interest centering on new contracts. Current business continues under heavy pressure.

Hopes of any improvement in the anthracite market during the balance of the season have been definitely abandoned by even the most optimistic, and the agencies are concentrating their efforts on cleaning up the surpluses now on hand, before the April discount goes into effect. As a result of the exceedingly light call for the prepared grades, and consequent restricted operations at the collieries, the output of steam sizes is falling somewhat behind consumption, and there is a moderate activity in this branch. On the domestic grades the situation has seldom been worse. Reductions down to the full April circular are obtainable without any difficulty, while large accumulations are reported, and dealers are buying only when accumulated requisitions amount a full car.

The opening of negotiations on new contracts is creating some activity in bituminous circles, though the current business continues as dull and flat as ever. The movement out of the Virginia terminals has been somewhat larger than usual, but there is evidence of a large accumulation, and the outlook for anything like a generally active market is negative. Shippers and agencies are canvassing aggressively for business, and purchasers are exceedingly slow in responding; prices are reasonably well maintained on the better grades, but the poor qualities are subject to heavy cuts, and especially so when it becomes necessary to free cars on demurrage.

In the Pittsburgh district the situation on new contracts is still indeterminate, though the general opinion indicates a concession on last year's figures. Some of the more optimistic agencies appear to be withdrawing from the contract market for the time being in anticipation of better conditions later in the season. On current business the market is almost at a standstill, with mining operations at about half capacity. The heavy drain of the European war upon Canada, involving expenditures already aggregating one hundred million dollars, together with the casualty lists which are now beginning to come in, have created a distinctly adverse sentiment in that direction, which is plainly observable in the fuel consumption.

Steam business in Ohio is down to an irreducible minimum, and though it is generally agreed that there must be more cold weather before the winter is over, the domestic trade continues exceedingly weak, dealers being loath to place additional orders and cancellations becoming more and more frequent. What little interest there is in the market is confined entirely to negotiations on requirements for the new coal year. Current production is at a low point, but in spite of this there is considerable demurrage coal reported in different directions.

Operations in the Middle Western field have been restricted down to about half capacity, with many mines shut down completely; in spite of this curtailment new record low prices are noted and the situation is becoming most distressing. The mild weather has completely paralyzed the domestic trade, while the West Virginia product is bringing unbelievably low prices in this market. The situation shows no improvement in any direction.

ATLANTIC SEABOARD

BOSTON

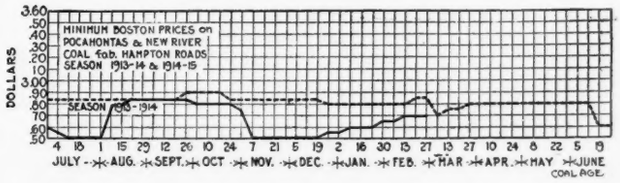
Only a few contracts under consideration. No developments in market for either Georges Creek or the Pennsylvania grades. Anthracite now waiting for spring orders.

Bituminous—There is almost no news to report on Pocahontas and New River. Receipts here are still restricted by the lack of orders, although in scattered instances there is still an impetus to contract demand due to old prices expiring Apr. 1. This latter is not general, however, although later there may be a wider development of it. Spot inquiry is very light, and accumulations continue large at the Virginia terminals. The prospect for anything like an active market for a long time to come is rather poor.

The bids to furnish 12,000 tons to the Boston Navy Yard by May 1 were opened early in the week and disclosed a new low price on a standard Pocahontas coal. The proposals ranged from $3.49@3.88 delivered alongside, the lowest bid apparently being figured at $2.85 f.o.b. Norfolk, plus a 64c. water freight, not including insurance. If prices like this continue to be named the outlook is not hopeful for remunerative figures later.

For inland delivery there is only a mild demand; $3.85@3.90, on cars, Boston, is still the basis for contract, with spot sales averaging 5@10c. higher.

All the Southern shippers are actively canvassing for business but buyers are slow responding; there is a general feeling that prices will settle down by May or June and there are only a few contracts now under consideration. The amount of transportation offering lately has helped to encourage buyers in their attitude.



Georges Creek shippers are still confining themselves to present obligations. With them there is also a dearth of spot business and there is an ample supply of coal at all the distributing and loading points. Delivered prices for the year beginning Apr. 1 have not so far been named, for these interests like others are waiting to see how the coastwise freight situation develops.

There is some current business on the Pennsylvania grades in anthracite transportation but mostly in cases where buyers are postponing a decision on yearly contracts; the demand therefore is only of the hand-to-mouth kind. Prices are being reasonably well maintained on the better Somerset and Cambria grades, but there are reports of heavy discounts in order to free cars on demurrage at the loading piers. The cheaper grades are having only a very light business.

Water Freights remain at $1, Hampton Roads to Boston, although there is an ample supply of tonnage for what trade there is. There have been rumors of rates less than $1, but so far they have not been verified. Occasional charters are still being made to South American ports, and at uniformly high rates; $960 was recently paid on a prompt steamer from Hampton Roads to Buenos Aires.

Anthracite is still extremely dull. The mines are all under heavy restrictions and in some cases orders for special lots have to wait until coal is mined. The mild weather is enabling retailers to continue on present stocks without replenishing.

Quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*	$0.90@1.50	$1.15@1.65	$1.67@1.77	
Philadelphia*	2.15@2.75	2.40@2.90	2.92@3.02	
New York*	2.45@3.05	2.70@3.20	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				$2.70@2.75
Boston†				3.85@3.95
Providence†				3.68@3.83

* F.o.b. †On cars.

NEW YORK

Bituminous continues dull and heavy with agencies concentrating their efforts on new contracts. Anthracite dealers pushing hard to clean up their stocks before the April discount becomes effective.

Bituminous—There is little change in the local situation. The weather conditions, which have so seriously affected the anthracite trade, nave also had their effect on the bituminous market; in consequence of the warm weather, manufacturers have not been called upon to heat their plants.

Railroads are not hauling as much freight, and the consumption is also lessened in that direction.

While there is no new business of importance to report, there have been a number of inquiries from consumers down East, due to the high water freights on Southern fuels, but up to this time little coal has moved in that direction. Most of the larger companies are making strenuous efforts to renew contracts on last year's basis, and in a number of cases have been successful. There is a disposition on the part of some consumers, however, to withhold signatures until later in the season when they expect to be able to drive better bargains.

The demand for bunker coal continues fair, and would probably be larger if more vessels were available for the export trade offering. Stocks at Tidewater are large and practically no sales of spot coal are being made; prices, however, continue on the same basis as previously quoted, excepting in cases where it has been necessary to sacrifice coal in order to save demurrage, and we continue the market as follows: West Virginia steam, $2.35@2.55; fair grades, Pennsylvania, $2.55@2.65; good grades of Pennsylvania, $2.70@2.80; best Miller Pennsylvania, $3.10@3.15; Georges Creek, $3.15@3.25.

Anthracite—The trade continues abnormally dull. Warm weather has not been conducive to buying nor has it increased the consumption. Dealers throughout the country are now worrying for fear they may have to carry over stocks purchased on the high circular. The only shortages of coal are on the sizes used for manufacturing gas and steam.

Broken coal is the most active and slightly short. Egg is easier than it was a week or two ago with prices at the circular and a little below. Stove and chestnut sizes are in plentiful supply and ranging all the way from the April to the winter circular, the companies holding firm to the winter schedule. In pea coal, there is no large demand nor are prices reduced so far as can be learned. All sizes of steam coals are short of requirements but not to an extent that warrants any high price. Without colder weather there will likely be little or no change in the market situation until April.

Quotations are as follows:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	$5.10	$4.60@5.10	$5.05	$4.55@5.05
Egg	5.35	4.85@5.35	5.30	4.80@5.30
Stove	5.35	4.85@5.35	5 30	4.80@5.30
Chestnut	5.60	5.10@5.60	5.55	5.05@5.55
Pea	3.55	3.40@3.55	3.50	3.30@3.50
Buckwheat	2.80	2.60@2.80	2.50@2.75	2.35@2.75
Rice	2.30	2.26@2.30	2.00@2.25	1.90@2.25
Barley	1.80	1.70@1.80	1.75	1.30@1.75

BUFFALO

Slackness in Canadian markets has an adverse effect. Prices on new contracts indeterminate. Mine operations curtailed. Anthracite dull.

Bituminous—As the contract season approaches, the shippers are at a loss what to ask; they cannot see how they can do business at lower prices and yet the consumer often refuses to close unless they can secure a reduction of 10 to 15c. a ton. A larger number of shippers than usual will stay out of the contract trade for the present, though they have small hopes of getting their prices later on.

The extreme slackness of the Canadian trade still tells on Buffalo shippers. It is plain that Canada is not going to have any surplus money for coal and the manufacturers do not show any increased activity. Canada has already spent $100,000,000 on the war, which is intensified by reports beginning to come in of casualties in the field. There is some report of new cutting of prices, but that is to be expected where it takes a good salesman to maintain a fair tonnage. Reports from the mining districts are not favorable to improvement. The mines run about half time and where most of the coal has to be sold in the open market it is no easy matter to do even that.

Bituminous prices are still at the bottom, being quoted at $2.80 for Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.15 for slack, with slack doing better than sizes. Allegheny Valley prices are 25c. below Pittsburgh.

Anthracite—The trade is called dull, but there is generally a good volume of business. Some of the smaller towns are cutting prices and making matters much worse than they otherwise would be, but there is no report of this in Buffalo. Western movements are not fast and it looks as if there would be more left on the Upper-Lake docks than was at first expected. A good amount of extra sizes are going into Lake vessels for shipments in the spring at the shipper's option; so far 18 cargoes have been loaded.

The winter loading has proved expensive to the insurance, as some of the bottoms were punctured in low water and two have been unloaded. It is expected that this loading will be kept up till the Lakes open. The vessel owners are likely to hold the cargoes here as long as the shippers will permit because Lake commerce is so dull.

PHILADELPHIA

No improvement in anthracite and open weather reduces demand. Dealers placing few orders and bituminous still lacks tone.

Anthracite—The season is so far advanced that dealers, in most cases, feel that if they dispose of the coal now on hand, they will have accomplished all that can be expected. Orders for new supplies have practically ceased. Dealers hesitate to take on a full car load of coal, fearing they will not be able to dispose of it, and it is only when the accumulated requisitions approximate a full car that they place an order.

The individual operators, and it is rumored some of the large companies, are shading prices to a considerable extent. Pea coal is quoted as low as $2 and egg and nut at the April circular or thereabouts. It is understood that there are large accumulations of stove size at Tidewater, but this will only be temporary; there is no size in more active demand in the early spring months than stove, and this year is likely to be no exception.

Dealers are already talking April prices, and salesmen find hard work in getting an order at the current circular. Buckwheat and rice situation is the only bright spot in the market, offerings being well taken care of, and circular prices maintained.

Tidewater prices rule about as follows:

	Circular	Individuals
Broken	$4.75	$4.50
Egg	5.00	4.80@4.90
Stove	5.00	4.90@5.00
Chestnut	5.25	4.90@5.00

Bituminous—In some quarters better call for certain brands is noted, but as a whole, the market remains without feature. Contracting still continues, with the same indifferent attitude on the part of the purchasing agents. Prices are on a parity with last week, and the inducement of a slight cut appears to offer little incentive to buying.

BALTIMORE

Operators busy on new contracts. On lower grade coals there is a possibility of reduced prices. Anthracite sales drop off.

The trade is devoting its attention almost exclusively to arranging new contracts. In some cases there is a disposition to renew at practically the same figures as obtained last year, but in others there is a strong inclination to hold out for lower prices. It seems entirely likely, from the present outlook, that contracts for some of the lower grade fuels will be made at slightly less rates than obtained last spring.

Warm weather is causing the anthracite trade to fall off. Except for isolated calls the trade has settled down to that period of waiting that always preceeds the regular contracting season and the time when the householders put in orders to take advantage of the lowest prices of the twelve months.

Export business is moving along at a brisk pace, and the prospects for late February and early March loading are excellent. The following charters were announced here this week: Italian steamer "St. Fillans," Naples; British steamer "Bedeburn," Italy; British steamer "Allanton," Sardinia; British steamer "Iddlesleigh," Italy; American schooner "Mary E. Palmer," Rio Janeiro; Norwegian steamer "Port Antonio," Guantanamo; American schooner "Stanley M. Seaman," Cienfuegos; American schooner "Lizzie M. Parsons," Cienfuegos, and American schooner "Charles T. Schull," Porto Rico.

HAMPTON ROADS

Movement for the week shows up well. Government loads both collier and barge tonnage. Demand improving somewhat and there is a brighter outlook for the February tonnage.

The dumpings from Hampton Roads piers for the week have shown up well considering existing conditions. In addition to shipments coastwise and foreign the government loadings have helped considerably to swell the week's movement, the U. S. Collier "Cyclops" alone taking 11,800 tons. Export cargoes have gone to Cristobal, Georgetown, Rio de Janeiro, Port of Spain and Havana. Of the coal exported Cristobal has taken the greatest percentage, three large cargoes having been consigned there.

The demand has improved somewhat on both the high volatile and New River and Pocahontas and there have also been some spot sales of prepared coal. With the coal already dumped and the amount of vessel tonnage due, the outlook for the month of February is perhaps somewhat better than was anticipated at the beginning.

Hampton Roads shippers were awarded a government contract for the delivery of 12,000 tons Navy Standard coal to Boston and about 1000 tons to Port Royal. The complete list of bidders and awards on this deal will be found under Contract No. 125 on p. 400.

OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
Mary E. Palmer		Norfolk	Rio Janeiro	1377	
Mount Hope		Philadelphia	Key West	989	
Edwin R. Hunt		Philadelphia	Porto Rico	1005	
Ruth E. Merrill		Baltimore	Boston	2309	
Port Antonio	Norwegian	Baltimore	Guantanamo	717	
Rob Roy		Baltimore	Mayport	684	
A. M. Carlisle		Philadelphia	Charleston	302	
Mantanza (bark)		Philadelphia	Cadiz	929	$6.75
Wm. E. Downes		Virginia	San Juan, P.R.,	639	2.40

Note—Steamers are indicated by **bold face** type, all others being schooners.

OCEAN FREIGHTS

Further advances and coal charters are even more difficult to negotiate.

The general freight market remains firm at the high levels reached last week, except to West Indian ports, which rates have advanced slightly, and it is very difficult to interest steamship owners in export coal due to the great demand for steamers for other trades.

We chartered several boats during the past week, and would suggest your communicating directly with us if you desire any steamers for export coal.

To	Rate	To	Rate
Havana	$3.00	Guantanamo	$3.75
Cardenas or Sagua	3.75	Demerara	5.50@6.00
Cienfuegos	3.50	Bermuda	3.75@4.25
Port of Spain, Trinidad	3.50	Vera Cruz	3.50
St. Lucia	3.50	Tampico	3.50
St. Thomas	3.50	Rio	9.60
Barbados	3.50	Montevideo, Buenos Aires or La Plata	9.00
Kingston	3.50@3.75	Mediterranean	11.40
Curacao	3.25	Valparaiso	7.20
Santiago	3.75		

Note—Rates noted in **bold face** type are only approximate.
W. W. Battie & Co.'s Coal Trade Freight Report.

OHIO VALLEY

PITTSBURGH

Mild weather and decreased demand. Mining continued at about 55% capacity, and more free coal than ever, with somewhat deeper price cutting.

The weather has been remarkably mild and the retail coal trade is almost at a standstill. Variations in domestic coal demand on account of temperature are particularly wide in a natural gas district like this because in many dwellings the rooms are heated normally with gas, this being supplemented, in cold weather only, by a coal-fired furnace. There has been no further increase in demand from railroads or manufacturers, but the consumption remains heavier than in December.

Mining operations being at the rate of about 55% of capacity there is more free coal than ever and prices remain quite irregular, odd lots occasionally going at a dollar or less for mine-run. There is still no interest being taken in Lake coal and it is generally accepted that prospects for the Lake trade are poor. Operators who two months ago thought they would not be satisfied to make contracts at $1.15 for mine-run would now probably be glad to accept that figure. We quote asking prices for best grades, usually shaded for prompt, unchanged as follows: Slack, 90c.@$1; nut and slack, $1.05; nut, $1.10; mine-run, $1.15; ¾-in., $1.25; 1¼-in., $1.35, per net ton at mine, Pittsburgh district.

TORONTO, CAN.

New tariff on bituminous now in effect. Anthracite quiet and demand easier.

The market is quiet and featureless with a lessened demand for anthracite. Last week the new tariff went into effect, increasing the duty on bituminous 7½%, the rate on anthracite remaining unchanged. So far the increase has had little effect on prices. Quotations are as follows: Retail anthracite, egg, stove and nut, $8; grate, $7.75; pea, $6.75; bituminous steam, $5.25; screenings, $4.25@4.50; domestic lump $6; cannel, $7.50; wholesale f.o.b. cars three-quarter lump $3.78; screenings, $3.

COLUMBUS

The long continued warm weather has had a distinctly adverse effect upon the domestic trade. Slowness characterizes the entire business and there is little hope for revival before the stocking-up period.

The domestic trade in Ohio has been rather weak during the past week, due to the continued high temperatures. It is believed that there will still be some cold weather before spring, but dealers are loath to increase their stocks at this time and cancellations have been frequent. In some cases where orders were not canceled, they have been held up indefinitely and will only be effective in case of a long cold snap.

Retail prices are still rather firm as dealers are not inclined to cut when there is practically no demand. Pocahontas and West Virginia splints are still favorites among the domestic consumers although there is quite a sprinkling of orders for Hocking.

Steam business is practically dead; manufacturing is quiet and requisitions for steam consumption are decreasing rather than increasing. Railroad fuel business is fairly active as they are taking a larger tonnage. In other lines there is no disposition to accumulate stocks and many of the users are content to buy in the open market so that the work of renewing steam contracts is most difficult. The demand for the small sizes is still rather strong because of the small amount of lump being produced.

Some attention is now being given to the Lake trade although it is still too early to predict as to the volume which will be required in the Northwest. A small amount of coal has already been loaded on vessels.

Production in Ohio fields is at a very low point. The Hocking Valley is estimated as producing about 30% of normal and the same figures are reported in the Jackson and Cambridge districts. In the Massillon field the output is about 40% and the Pomeroy Bend about 50% of the average.

Prices in the Ohio fields are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump	$1.45	$1.50	.....
Inch and a quarter	1.30	1.35	$1.30
Three-quarter inch	1.25	1.30	1.25
Nut	1.15	1.25	1.15
Mine-run	1.05	1.10	1.05
Nut, pea and slack	0.60	0.65	0.55
Coarse slack	0.50	0.55	0.45

CLEVELAND

Spring weather keeps the market stationary. Consignment coal a drug on the market. Considerable anthracite being loaded on Lake vessels at Buffalo.

Retail trade is much below normal and dealers are neither ordering new coal nor moving stocks on hand. The weather is so warm that domestic fuel for the large consumers, such as apartment houses and blocks, is barely moving. The weather is also having its effect on the steam trade as factories use a large amount of additional fuel in cold weather to warm the shops.

The smaller sales have not resulted in a material change of prices, but have kept the brokers and operators active to avoid car service. Brokers have been asked to aid in cleaning up coal on track, but the larger agencies have had all the coal they could handle without taking on more. Consignment coal is a drug on the market; this is largely three-quarter, and the coarse coal market is much depressed. Last fall the gas well drillers were the principal consumers of surplus coarse coal, but of the 80 to 100 rigs that were at work at that time, more than 75% are now idle or working in territory where they can get gas. Slack sells at $1.65 to $1.70 with West Virginia three-quarter at $1.80 on track here.

Anthracite—Buffalo anthracite shippers are taking all the vessel tonnage available for coal. As fast as ships unload grain they are chartered, the coal shippers paying the expense of moving the vessels to the docks. The contracts also call for delivery of the coal not earlier than one month from the date navigation opens, Apr. 15, or as soon thereafter as ice moves out of the harbor. The coal shippers do not need the coal at the Upper Lakes until late in the summer and the steamship business has not shown any indication of opening early; for this reason owners will not charter until they know they can hold the boats in port until down cargoes can be procured.

The market continues quotable as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmont	W. Va. No. 8
Lump	$3.60	.....	.....	.....	.....
Lump, 6 in.	.....	.....	$2.35	.....	.....
Lump, 1½ in.	.....	.....	2.20	$1.95	.....
Lump, 1¼ in.	.....	$2.35	.....	.....	.....
Lump, ¾ in.	.....	2.25	2.10	1.90	$2.05
Egg	3.60	.....	.....	.....	.....
Egg, 6 in.	.....	.....	2.00	.....	.....
Mine run	2.60	2.15	1.90	1.85	1.95
Slack	.....	1.80	1.75	1.70	1.75

CINCINNATI

Some contract business closed. Prompt market dull and operators are restricting production.

With generally mild weather the feeling is growing that there is little use to look for any more winter business, and attention is now devoted to the beginning of the spring season. The movement of prepared sizes for the domestic trade

is extremely slow, dealers buying only for immediate needs, and many of them having coal to carry over. A very slight improvement in the local steam market is noted, but not enough to create any marked stimulation to business.

The logical course of restricting production is being followed by some operators. There is still some little distress coal available and buyers are consequently holding off in hopes of picking up bargains. Even the smokeless producers have been affected by this, prices having broken somewhat as compared to the usually steady market for Pocahontas. Reports of possible trouble in several of the West Virginia districts this spring are expected to have a stimulating effect on the market.

LOUISVILLE

Prices ease off still further and now range at less than summer figures. Additional restrictions in working schedules.

Prices are even lower than the usual summer schedule and such contracts as are being renewed are ranging from 10 to 15c. below the previous figures. Operations are on a dwindling basis also, western Kentucky being the first to feel the slump.

Asking prices, which are purely nominal, range from $1.50 to $1.60 for block, though sales are being made as low as $1.25; lump is offered at $1.30 to $1.40; round at from $1.25 down, while nut and slack top prices are from 50 to 65c., with very little demand for the lower grades; these prices are f.o.b. mines. The operators usually keep going as long as they can realize cost of production but when that fails the mines are closed down.

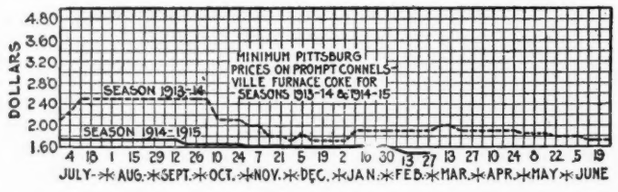
COKE

CONNELLSVILLE

Coke market stagnant and contract coke available at lower prices than under recently made contracts. Production and shipments substantially unchanged.

The coke market continues stagnant. The furnaces in operation seem to be well provided with coke and no additional furnaces are going into blast that would need to buy. Prices are not well developed as there is no inquiry but it is certain that purchases could be made for delivery to July 1 at least at a lower level than when contracts were being made two or three months ago. We quote: Prompt furnace, $1.50@1.55; contract furnace, first half, $1.65; year, $1.75; prompt foundry, $2@2.35; contract foundry, nominal, $2.20@2.30, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Feb. 13 at 250,855 tons, a decrease of 5503 tons, and shipments at 249,543 tons, an increase of 1696 tons.


DOLLARS
4.80
3.60
3.20
2.80
2.40
2.00
1.60
MINIMUM PITTSBURG PRICES ON PROMPT CONNELSVILLE FURNACE COKE FOR SEASONS 1913-14 & 1914-15
SEASON 1913-14
SEASON 1914-1915
4 18 1 15 29 12 26 10 24 7 21 5 19 2 16 30 13 27 13 27 10 24 8 22 5 19
JULY-*AUG.*SEPT.*OCT.*NOV.*DEC.*JAN.*FEB.*MAR.*APR.*MAY*JUNE

Buffalo—There is still report of a better movement of coke at the oven centers and it must be that someone is making more iron that formerly. Whether this really means the beginning of a return to iron activity remains to be seen, but as a rule the shippers do not look for it yet. They say that the showing is more accidental than otherwise. There is no increase in the prices of coke, best 72-hr. Connellsville foundry selling for $4.25 and stock coke at $3.30.

Chicago—The demand for furnace and foundry coke is slow with prices irregular. There is some increased buying of domestic coke, but in general the expected improvement has not materialized. Prices are as follows: Byproduct, $4.75@4.95; Connellsville, $4.65@4.80; Wise County 72-hr. (select), $4.50@4.75; gas coke, $4.10@4.25; furnace, $4.50@4.65.

THE STEEL INDUSTRY

Steel mills maintain their increased schedules, but the outlook is still indeterminate. Railroad buying continues unsatisfactory.

February is enjoying a heavier daily percentage of specification on contracts than did January, a condition reflected in the higher rate of operations of the steel mills, and March will be materially helped by the fruition of contracts of quite some volume on which figuring has been going on this month. There are numerous negative influences which tend to chill the enthusiasm for the immediate future, but confidence in continued steady, if slight, improvement persists. Nothing has happened to shed light on how well March advances for finished steel will be held, but it is to be remembered that the bulk of the normal consumption is under contract and will not be pressing the market.

The Carnegie Steel Co. is operating at 65% of capacity, the American Sheet & Tin Plate Co. at 95% of capacity, with independent tin-plate makers ranging from 75 to nearly 100%, and the plate mills of the United States Steel Corporation at Homestead are turning out over 75% of their capacity, largely for pipe work taken a short time ago by the National Tube Co.

While railroads are still slow in deciding on bridge work and car builders have inquiry now for not more than 2400 cars, both freight and passenger, to encourage them, some rail purchases are to be noted, including 8000 tons for the Soo Line, 6000 tons for the Southern and 5000 tons for the Baltimore & Ohio. It is estimated that 15,000 tons of girder rails have been sold in the last two or three weeks. China is asking for 9000 tons of rails.—"The Iron Age."

MIDDLE WESTERN

ST. LOUIS

Quotations off to new record low levels. Many mines shut down. Conditions fail to show improvement in any direction.

The local coal market is in a most distressing condition; what was supposed to be the bottom of the market a few weeks ago was eclipsed during the past week when it came to low prices. In some instances Carterville coal got down to $1.10 for egg and $1.15 for lump, while nut went at $1, screenings at from 60c. to 70c. and mine-run was plentiful at 90c. Many mines in the field shut down rather than put their coal on the market at these figures and there was even some question as to whether coal could be marketed at these prices, in view of the large over-production coal that went on demurrage at many points.

In the Standard field 2-in. lump went down to 90c. with screenings at 50c. and 6-in. lump at $1.10 to $1.15. With very little chance of much colder weather there is little hope for any good prices on domestic sizes; this means that with any demand at all for steam coal, these prices will advance rapidly from now on. However, the business depression is not bettering in this section, despite rumors to the contrary and a lot of boosting both privately and publicly. A local ice plant contracted for Mt. Olive 2-in. screenings during the past week for 50c. a ton at the mines, this coal taking a 57½c. freight rate. The contract price on this grade of coal during the past year was from 62½c. to 65c. at the mines.

There is a small movement of anthracite coming in and a very small tonnage of smokeless.

CHICAGO

Apathy dominates the market with prices declining. Illinois and Indiana coarse coals weak. Smokeless situation depressed. Steam coals soft.

The market is decidedly weak and uncertain for all grades. This is due mainly to the continuance of warmer weather and the inability of producers to curtail their production in conformity with the demand, or perhaps the unwillingness of some shippers to restrain the forwarding of consignment coal. Retailers' stocks are more than ample for current needs, and they are not inclined to increase them; a number of them already have stocks which will be carried over until late next summer at the present rate of absorption. The contract period is now approaching, but retailers show no inclination to obligate themselves on future business because of the bitter experience during the past season.

Steam coals for manufacturing and industrial plants show no betterment. Some districts report slight improvement in the demand for screenings, but on the whole any considerable increase is not discernible. Indiana and Illinois mines are operating approximately one-half time, and curtailment of tonnage does not seem to help quotations.

Franklin and Williamson County operators issued a new circular this week reducing the price on lump, egg and No. 1 nut to $1.50. There is an immense quantity of the smaller sizes on hand unsold, with little business offered.

The domestic demand from the Indiana mines is nil, and what little coal they are producing is for steam purposes. Three important producing mines have been permanently abandoned during the past three weeks, two of which have been operating for ten years past. The steam coal prices are unchanged, but with a weakening tendency.

In the Springfield district, the domestic demand is very light, and prices for steam coals remain about the same; railroads are taking their minimum contract requirements from this section.

An increasingly wide variation in prices is noted on eastern Kentucky grades, and the idea seems to be to sell the coal at most any figure in order to dispose of it.

Hocking shipments to this territory have been curtailed and prices are improved as a result; most sales are around $1.35 to $1.50.

Splint coals are a drug on the market at prices ranging from 35c. to 50c. below the normal level.

As an indication of the shattering of prices in smokeless coals, a representative of one of the prominent shippers recently offered 50 cars of smokeless mine-run at a price of 70c. and found but few takers. There has been a decided slump in the demand for smokeless coal, and spot sales are made at almost unbelievable prices.

Prevailing quotations are as follows:

	Franklin Co.	Springfield	Sullivan	Clinton	Carterville
Lump	$1.35@1.50	$1.25@1.40	$1.35@1.75	$1.35@1.50	$1.40@1.75
4-in. lump	....	....	....	....	....
Steam lump	....	....	....	....	....
2½-in. lump	....	....	1.25@1.40	....	....
1¼-in. lump	....	....	1.20@1.35	....	....
Mine-run	1.05@1.15	1.00@1.05	1.05@1.10	....	....
Egg	1.25@1.50	1.25@1.40	1.15@1.35	1.15@1.35	1.30@1.65
No.1washed	....	....	....	....	1.25@1.50
No.2washed	....	....	....	....	1.20@1.40
6x3-in. egg	....	....	....	....	....
Nut	....	1.15@1.25	1.10@1.25	1.15@1.25	....
No. 1 nut	1.25@1.40	....	....	....	....
No. 2 nut	1.25@1.35	....	....	....	....
Screenings	0.65@0.75	0.55@0.65	0.65@0.75	0.65@0.75	....

	Harrisburg	E. Kentucky	N. Riv. & Poca.	Somerset	Hocking
Lump	$1.25@1.50	$1.40@1.65	$1.50@2.00	$1.50@2.00	....
1¼-in. lump	....	1.35@1.50	....	....	$1.25@1.50
Lump & egg	....	....	....	....	....
Mine-run	1.05@1.10	....	1.15@1.25	1.05@1.25	1.15@1.25
Egg	1.25@1.50	1.10@1.25	1.75@2.25	1.65@2.25	....
No. 1 nut	1.35@1.50	....	1.40@1.75	....	....
No. 2 nut	1.30@1.35	....	....	....	....
Screenings	0.55@0.70	....	....	....	....

Knox and Greene County 5-in. lump, $1.35@1.50; 3-in. lump, $1.25@1.35; 5-in. egg, $1.20@1.35; 3-in. egg, $1.20@1.35; mine-run, $1.50@1.10; screenings, 60@70c.

INDIANAPOLIS

Weather against an active coal trade. Mines on half time. Screenings not plentiful and price has stiffened. The block coal field reports a poor season.

The weather has been almost spring-like, cutting down the demand for all kinds of coal, particularly domestic lump. About the only hope for betterment is a larger demand for steam grades from factories and this is slow to materialize. Mines are on half-time. Those in the block field report that the winter season now closing has been about as poor as any in the history of the district; only a few of the mines have had a steady run and then only for short periods. The medium-size mines of the state have been the chief sufferers. There have been no changes in prices, either at the mines or retail yards, and the trade has given up hope of any advance the remainder of the season. Owing to the lessened production of other grades, slack is getting scarce and some companies announce sales at a premium.

KANSAS CITY

Retailers are buying little and market is sluggish. Mild weather continues.

A slackening of trade was felt among the retail dealers during the last week because of the mild weather, but the first sign of lower temperatures is expected to cause a rush from buyers whose supplies become depleted at this season of the year. The retail yards have enough tonnage on hand to care for present needs, which makes trade slow for the wholesale men.

PRODUCTION AND TRANSPORTATION STATISTICS

THE COAL CAR SITUATION

After having discontinued the publication of car surpluses and shortages since Nov. 1, 1914, the American Railway Association has once more resumed issuing these statements although in a somewhat abbreviated form. The initial report shows the situation on Feb. 1, covering 159 railroads as compared with 192 railroads on the date of the last statement. The gross surplus of idle coal and gondola cars on Feb. 1, of the current year, was 133,200 and the shortage 201.

IMPORTS AND EXPORTS

The following is a comparative statement of imports and exports of the United States for December, 1913-14, and for the twelve months ending December, 1912-13-14, in long tons:

	Twelve Months			December	
Imports from:	1912	1913	1914	1913	1914
United Kingdom	8,697	6,141	27,421	812	10,992
Canada	1,404,139	1,096,924	1,050,592	116,944	112,759
Japan	30,621	117,483	75,109	18,046	19,170
Australia and Tasmania	162,671	188,613	219,941	27,859	25,114
Other countries	2,222	4,696	2,253	1,400	.....
Total	1,608,350	1,413,857	1,375,316	165,061	168,035
Exports:					
Anthracite					
Canada	3,615,530	4,083,333	3,767,774	219,422	182,349
Brazil	.....	.....	6	.....	.....
Uruguay	.....	84	.....	84	.....
Other countries	73,259	70,969	62,464	6,885	2,118
Total	3,688,789	4,154,386	3,830,244	226,391	184,467
Bituminous					
Canada	10,433,010	13,496,190	9,170,901	746,890	428,777
Panama	486,309	489,761	267,598	37,210	15,800
Mexico	302,487	477,046	359,802	37,619	35,266
Cuba	1,152,004	1,275,538	1,074,825	74,580	62,733
West Indies	651,268	608,762	552,600	60,308	28,596
Argentina	.....	70,048	241,248	.....	9,305
Brazil	.....	279,933	278,026	29,270	17,090
Uruguay	.....	16,858	76,088	11,695	.....
Other countries	1,434,900	1,272,621	1,780,762	132,404	98,997
Total	14,459,978	17,986,757	13,801,850	1,129,976	696,546
Bunker coal	7,340,100	7,700,520	7,266,002	607,249	490,931

NORFOLK & WESTERN

Destination of shipments over this road for January of this year, the twelve months of last year and the year before were as follows, in short tons:

	January		Twelve Months	
Coal	1914	1915	1913	1914
Tidewater, foreign	151,315	104,250	1,542,950	1,904,306
Tidewater, coastwise	337,654	260,551	3,805,847	3,763,420
Domestic	1,476,845	1,522,137	19,512,118	19,804,243
Coke				
Tidewater, foreign	.....	414	31,082	1,415
Domestic	118,745	69,801	1,567,323	1,017,196
Total	2,084,559	1,957,153	26,459,320	26,490,580

FOREIGN MARKETS

ENGLAND

Markets in the most acute condition in the history of the country. Inadequate car supply the main trouble.

London, Feb. 12—There is little doubt that the coal industry as a whole has fallen into a state of chaos without precedent in its history perhaps. The conditions prevailing during the Boer War and the last great strike were by no means so bad as those of today, and it has been a blessing to the house coal trade that the winter has been of the mildest character so far. As it is, the demands for coal of all descriptions and in all directions is much in excess of the available supply. Transport difficulties are accountable for more than half the trouble, but it is impossible to get anyone connected with the railways to admit any such contention. Nevertheless, we have well authenticated cases of wagons taking a couple of months to perform the double journey from the colliery to destination and back. That this has been quite unavoidable owing to transport of troops and war stores of all descriptions does not alter the fact, and with the general public clamoring for the Government to regulate the price of coal and works of all descriptions at their wits' end to get in adequate supplies, it is only bare justice to the whole trade that the actual facts should be made known.—"The Iron & Coal Trades Review."

Feb. 12—There is a strong demand for all classes of coal for March loading. Prices show a further advance and are approximately as follows:

Best Welsh steam	$5.28@5.40	Best Monmouthshires	$4.74@4.80
Best seconds	4.92@5.16	Seconds	4.56@4.68
Seconds	4.86@4.98	Best Cardiff smalls	4.08@4.20
Best dry coals	4.80@5.04	Cargo smalls	3.60@3.84

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport both net, exclusive of wharfage.

Freights—Owing to difficulty in arranging loading turns chartering is slow. Rates are approximately as follows:

Gibraltar	$4.80	Naples	$7.68	Las Palmas	$5.16
Malta	....	Venice, Ancona	10.20	St. Vincent	5.52
Marseilles	5.79	Alexandria	7.20	Rio Janeiro	6.72
Algiers	5.40	Port Said	7.20	Monte Video	5.76
Genoa	7.68			River Plate	6.00

Note—These quotations are based on an exchange rate of one shilling equals 24 cents.

Coal Contracts Pending

Contracts listed in this department are authoritative in every respect except where the source of information is questionable, in which event it is noted. All contracts are listed promptly on receipt and only repeated when additional information becomes available or in the last issue previous to the day on which bids will be closed. Liberal remuneration will be paid for all legitimate notices of this kind sent in.

No. 67—Schenectady, N. Y.—The local city government will be in the market for about 4730 tons of anthracite stove and egg coal, Mar. 1 (p. 275). The contract is usually closed at about $6.50 per ton. Address Board of Contract and Supply, Franklin St., Schenectady, N. Y.

No. 75—Ottawa, Can.—The Canadian Department of Public Works has asked for tenders until Mar. 1 for supply of best quality steam coal to be delivered in quantities, and at places specified (p. 275). Address Secy. R. C. Desrochers, Department of Public Works, Ottawa, Can.

No. 77—Rochester, Ind.—The Rochester Electric Light, Heat & Power Co. at this point will be in the market for 7000 tons of Indiana mine-run coal on Mar. 1 (p. 275). The contract is to run over one year and it is usually closed at $2.10 per ton. Address Rochester Electric Light, Heat & Power Co., Rochester, Ind.

No. 78—Detroit, Mich.—The Municipal Electric Light Plant will be in the market for 1800 tons of Youghiogheny dock-run coal on Mar. 1 (p. 275). This coal laid down at Detroit usually costs $5 per ton and deliveries are to be made over the next year. Address City Clk. E. J. Bestick, Detroit, Mich.

No. 85—Baltimore, Md.—Henry Sonneborn & Co., Pratt and Paca St., Baltimore, will be in the market about Mar. 1 for 3500 to 4000 tons of standard mine-run coal (p. 318). Address Pur. Agt. A. Mainzer, Baltimore, Md.

No. 86—Hinsdale, Ill.—The Municipal Electric Light Plant, at this place, will be in the market about the first of next month for 4000 tons of screenings (p. 318). The approximate cost is 90c. per ton at the mine and Purity coal is commonly used. The contract is let on a competitive basis. Address Mgr. H. H. Bristol, Municipal Electric Light Plant, Hinsdale, Ill.

No. 87—New York, N. Y.—The bids on this contract (p. 318), which provides for furnishing and delivering anthracite and semibituminous coal, were as follows, per gross ton:

	Semibituminous			Buckwheat		No. 3	Pea	
	600	75	150	2300	425	850	1200	500
Name of Bidder	1	2	3	1	2	3	4	5
Empire C. Min. Co.	$3.08	...	...	$2.14	...	...	$3.76	...
Gavin Rowe	2.98	...	...	1.87	$2.89	$2.87	3.85	$3.89
Meeker & Co.....	...	...	...	2.31	...	...	3.69	3.69
Lineaweaver & Co.	2.87	...	...	1.81	...	...	3.53	...
John W. Peale...	3.05	...	4.60	2.00	...	2.65	3.72	3.72
J. E. Schmadeke.	...	...	3.99	...	...	2.85	...	...
Bacon Coal Co...	...	$4.43	4.31	...	3.38	3.18	...	...
G. A. Harris & Co.	3.15	...	...	2.20	...	...	3.85	3.85
Wm. Farrel & Son	3.20	4.40	3.75	1.78	3.35	3.50	3.74	3.74
C. D. Norton Co..	2.98	...	...	1.88	...	...	3.74	3.74
Penn Fuel Co....	3.25	...	...	2.20	...	...	4.05	4.05

[1]Delivery at Harts Island. [2]Delivery at city prison, Manhattan. [3]Delivery at city prison, Brooklyn. [4]Delivery at penitentiary on Blackwells Island. [5]Delivery at workhouse, Blackwells Island.

Address Comr. Katherine Bement Davis, Department of Correction, Municipal Bldg., New York.

No. 92—Kennebunk, Maine—The electric light department at this place will be in the market about Mar. 1 for 375 long tons of Georges Creek coal (p. 318). The usual contracting figure is about $5 per ton. The award is made on a competitive basis. Address Supt. I. H. Wells, Electric Light Dept., Kennebunk, Maine.

No. 103—Ottawa, Ont., Can.—Bids will be received until 4 p.m., Mar. 1, for furnishing a supply of steam coal for the departmental dredges (p. 356). R. C. Desrochers is Secretary of the Department of Public Works, Ottawa. Address Dist. Engr. John Sweeney, Winnipeg, Man., Can.

No. 117—Boston, Mass.—This contract (p. 357) will be closed during March instead of April as previously announced; deliveries are to be in proportionate amounts each month at Tidewater, Hampton Roads, Va. Address R. E. Hamilton, 147 Milk St., Boston, Mass.

No. 122—St. John, N. B., Can.—Sealed tenders will be received until 4 p.m., Mar. 1, for furnishing coal for the Departmental Dredges for Nova Scotia and New Brunswick (p. 357). Address Supt. of Dredges J. K. Blenkinsop, Dept. of Public Works, St. John, N. B., Can.

No. 136—Sandusky, Ohio—Sealed bids will be received by the city government until noon, Mar. 1, for furnishing about 3000 tons of bituminous mine-run coal (p. 357). Address Dir. of Pub. Ser. John J. Molter, Sandusky, Ohio.

No. 137—Ellensburg, Wash.—Bids will be received up to 8 a.m., Mar. 1, for furnishing steam coal for Kittitas County at the following places: Heating plant at county jail, at Shoskins and Holmes Spur and at such places in Ellensburg as required (p. 357). Delivery is to be made in carload lots. Address County Audr. W. G. Damerow, Ellensburg, Wash.

No. 142—Poughkeepsie, N. Y.—Bids will be received until 10 a.m., Mar. 2, for furnishing one year's supply of anthracite coal for the Hudson River State Hospital. Specifications may be obtained on application (p. 358). Address the Purchasing Committee, Capitol Bldg., Albany, N. Y.

No. 143—Buffalo, N. Y.—Bids will be received until Mar. 3 for furnishing the annual supply of anthracite and bituminous coal for the schools and other public buildings of the city (p. 358). Deliveries are to be made in such quantities and at such times as specified. Each bid must be accompanied by a check for 10% of the total bid, and bonds for 50% will be required. Address Comr. Francis G. Ward, Dept. of Public Works, Buffalo, N. Y.

No. 150—Boston, Mass.—The United States Post Office and Sub Treasury Building here, will receive bids until Apr. 1 for furnishing coal during the fiscal year ended June 30, 1916. Bids are requested on 1800 tons of anthracite screenings and 1300 tons of bituminous mine-run. Deliveries are to be as required. Address, Custodian Wm. F. Murray, United States Post Office and Sub Treasury Building, Boston, Mass.

No. 151—Baltimore, Md.—The Baltimore American consumes about 800 tons of soft coal per year. The present contract expires during April. Address Mgr. J. W. Stoddard, The Baltimore American, Baltimore, Md.

No. 152—Forestdale, R. I.—The Forestdale Mfg. Co. will be in the market for approximately 4000 tons of bituminous coal about Apr. 1. Address Pur. Agt. A. Grove, Forestdale Mfg. Co., Forestdale, R. I.

No. 153—West Upton, Mass.—William Knowlton & Sons will soon place a contract for 1500 tons of bituminous coal, deliveries to commence about Apr. 1. Address Pur. Agt. George W. Knowlton, Jr., William Knowlton & Sons, West Upton, Mass.

No. 154—Stamford, Conn.—The Stamford Gas & Electric Co. will be in the market about Apr. 1, for 5000 tons of gas coal. Address Pur. Agt. R. Crawford, Stamford Gas & Electric Co., Stamford, Conn.

No. 155—Boston, Mass.—Williams & Bangs, at this place, will soon be in the market for about 15,000 tons of bituminous and anthracite coal for use in various buildings in the city. Deliveries are to be as required.. Address, Daniel F. Carew, 18 Tremont St., Boston, Mass.

No. 156—Baltimore, Md.—The Baltimore Sun consumes about 700 tons of soft mine-run coal annually, the present contract expiring in April. Address Pur. Agt. Miss M. B. Koller, The Baltimore Sun, Baltimore, Md.

No. 157—Detroit, Mich.—Sealed proposals will be received up to 2 p.m., Mar. 9, by the Board of Water Commissioners for furnishing 25,000 tons of bituminous mine-run coal. The Board reserves the right to order, before Aug. 15, 2000 additional tons at the contract price. Each bid must be accompanied by a certified check of $500. Address Secy. H. A. Gilmartin, Board of Water Commissioners, Detroit, Mich.

No. 158—Newark, N. J.—Bids will be received until Mar. 3 by the Board of Chosen Freeholders for furnishing a supply of coal from Mar. 15, 1915, to Sept. 16, 1915. Address Clk. of the Board of Chosen Freeholders, Newark, N. J.

No. 159—West Fitchburg, Mass.—The Fitchburg Paper Co. at this place will contract for 1800 tons of bituminous coal, deliveries to commence about Apr. 1. Address Pur. Agt. G. R. Wallace, Fitchburg Paper Co., West Fitchburg, Mass.

No. 160—Baltimore, Md.—The Riddlemoser Bldg., Baltimore, uses from 450 to 525 tons of soft mine-run coal per year, the present contract expiring in April. Address Pur. Agt. Bagby & Baer, Room 818 Fidelity Bldg., Baltimore, Md.

No. 161—Pawtucket, R. I.—The Greene & Daniels Mfg. Co. will be in the market for about 5000 tons of bituminous coal on Apr. 1. Address Pur. Agt. A. C. Dexter, Greene & Daniels Mfg. Co., Pawtucket, R. I.

No. 162—Shelton, Conn.—The Adams Mfg. Co., at this place, will be in the market about Apr. 1 for 3500 tons of bituminous coal. Address Pur. Agt. R. F. Adams, Adams Mfg. Co., 106 Grand St., New York, N. Y.

No. 163—Boston, Mass.—The Quincy Cold Storage & Warehouse Co., at this place, are in the market for 15,000 to 20,000 tons of bituminous mine-run coal. Deliveries are to begin Apr. 1 and to be as required, but chiefly during the summer period. It is said that the company have nearly closed their contracts already. Address, Treas. & Mgr. Geo. H. Stoddard. 133 Commercial St., Boston, Mass.

No. 164—Detroit, Mich.—Sealed proposals will be received until 2 p.m., Mar. 9, by the Board of Water Commissioners for furnishing about 700 tons of bituminous and 40 tons of anthracite coal to be delivered at the storage yard, emergency station and office of the Board of Water Commissioners. Address Secy. H. A. Gilmartin, Board of Water Commissioners, Detroit, Mich.

No. 165—Stamford, Conn.—Beck & Co. will contract for 2500 tons of bituminous coal about Apr. 7. Address Pur. Agt. George F. Leeming, 206 West 29th St., New York, N. Y.

No. 166—Concord, N. H.—The Board of Education at this place will be in the market on Apr. 1 for about 1000 tons of anthracite coal. The coal is bought from local dealers, the call for bids being advertised and the customary price is $6.80 per ton. Address Finance Com., Bd. of Education, Concord, N. H.

No. 167—Exeter, N. H.—The Exeter Mfg. Co. at this place will be in the market on Apr 1. for 3000 tons of bituminous coal, deliveries to be made over the next year. For full particulars address Pur. Agt. Chester A. Hatch, Exeter Mfg. Co., Exeter, N. H.

No. 168—Bridgeport, Conn.—The Burns & Bassick Co. will be in the market about Apr. 1 for 1100 tons of bituminous coal. Address Pur. Agt. W. F. Burns, Burns & Bassick Co., Bridgeport, Conn.

No. 169—Athol, Mass.—The Athol Gas & Electric Co. will be in the market Apr. 1 for about 1700 tons of bituminous coal. Address Pur. Agt. P. B. Webber, Athol Gas & Electric Co., Athol, Mass.

No. 170—Pontiac, Mich.—Bids will be received until 1:30 p.m., Mar. 11, for furnishing the Pontiac State Hospital with a supply of coal for one year commencing May 1, 1915. The approximate quantities are 7500 tons of free-burning three-quarter lump bituminous coal and about 500 tons of anthracite coal (250 tons grate, 250 tons stove, and 30 tons chestnut). Prices must be f.o.b. hospital, and bidders must specify location of mine. Address Steward E. H. Halsey, Pontiac State Hospital, Pontiac, Mich.

No. 171—Bridgeport, Conn.—The Salts Textile Mfg. Co. will be in the market about Apr. 1 for 10,000 tons of bituminous coal. Address Pur. Agt. C. F. Steod, Salts Textile Mfg. Co., Bridgeport, Conn.

No. 172—Boston, Mass.—The Boston & Maine R.R. Co. will soon be in the market for about 1,750,000 tons of bituminous coal. Address Pur. Agt. H. A. Fabian, Boston & Maine R.R. Co., Boston, Mass.

No. 173—Indianola, Iowa—The local city government will be in the market for 2500 tons of steam and mine-run coal on Apr. 1. The coal is bought on a competitive basis, the prices ranging from $1.70 to $2.10. Address Supt. G. G. Litzenburg, Indianola, Iowa.

No. 174—Bridgeport, Conn.—The Union Typewriter Co. contracts for about 2000 tons of bituminous coal about Apr. 1. Address Pur. Agt. F. H. Willard, Union Typewriter Co., Bridgeport, Conn.

No. 175—Medfield, Mass.—The Medfield State Asylum will be in the market for 6000 tons of bituminous coal, about Apr. 1. Address Pur. Agt. F. H. Gross, Medfield State Asylum, Medfield, Mass.

No. 176—St. Joseph, Mich.—The municipal government here will be in the market on Apr. 1 for both anthracite and bituminous coal. From 800 to 1000 tons of mine-run bituminous will be required for the water department and the customary price for this grade is $3.45 f.o.b. From 500 to 800 tons will also be required for the light department, the usual price on which is $5.85. Address the St. Joseph Water Dept. and Supt. F. A. Bunks of the Light Dept., St. Joseph, Mich.

No. 177—Gillespie, Ill.—The light and power department at this place will be in the market for 3000 tons of screenings on about Apr. 1. The customary price ranges about 75c. at the mines and the business is negotiated on a competitive basis. Address, Southern Illinois Light & Power Co., Gillespie, Illinois.

No. 178—Southbridge, Mass.—The Southbridge Printing Co. will contract about Apr. 1 for 12,000 tons of bituminous coal. Address Pur. Agt. Frank Hastley, Treasurer, Southbridge Printing Co., Southbridge, Mass.

No. 179—Boston, Mass.—Williams & Bangs will soon be in the market for about 15,000 tons of bituminous and anthracite coal, to be delivered as required. Address Daniel F. Carew, 18 Tremont St., Boston, Mass.

No. 180—Walpole, Mass.—The Walpole Rubber Co. will contract about Apr. 1 for 8000 tons of anthracite and bituminous coal. Address Pur. Agt. A. J. Baldwin, Walpole Rubber Co., Walpole, Mass.

No. 181—Bridgeport, Conn.—The Canfield Rubber Co. at this place will contract about Apr. 1 for 1800 tons of bituminous coal. Address Pur. Agt. C. F. Holcomb, Canfield Rubber Co., Bridgeport, Conn.

No. 182—Niagara Falls, N. Y.—The local school board will be in the market on Apr. 1 for about 1700 tons of semi-anthracite coal. This business is usually done on contract with the summer delivery at $4.80 per ton and winter delivery $5.30 per ton. Address the Board of Education, Portage Road, Niagara Falls, N. Y.

No. 183—Shawano, Wis.—The city water and light plant at this place will be in the market for 2000 tons of bituminous coal, contract for which will be made on Apr. 1. This business is usually done on a competitive basis, the customary price ranging around $3.90, delivered. Address Supt. Paul E. Papsaw, City Water & Light Plant, Shawano, Wis.

No. 184—Providence, R. I.—The Gorham Mfg. Co. at this place will contract about Apr. 1 for 5000 tons of bituminous coal. Address Pur. Agt. C. E. Fairbanks, Gorham Mfg. Co., Providence, R. I.

No. 185—Danbury, Conn.—E. A. Malloy & Sons, Inc., will be in the market about Apr. 1, for 3000 tons of bituminous coal. Address Pur. Agt. H. B. Malloy, E. A. Malloy & Sons, Inc., Danbury, Conn.

No. 186—Natick, Mass.—The Natick Gas Light Co.. at this place, will contract about Apr. 1 for 1700 tons of gas coal. Address Pur. Agt. R. W. Harwood, Treas., Natick Gas Light Co., Natick, Mass.

No. 187—Wolfeboro, N. H.—The local electric light department will be in the market for approximately 300 tons of Georges Creek coal on Apr. 1. The customary price is $5.60, f.o.b. station. Address Supt. H. L. Miles, Wolfeboro, N. H.

No. 188—Sturgeon Bay, Wis.—The local utility commission will be in the market for about 4000 tons of coal, contract for which will be made during either March or April. Youghiogheny three-quarter coal is ordinarily used, and the price is about $3 per ton. Address Supt. James E. Johnson, Sturgeon Bay Utility Commission, Sturgeon Bay, Wis.

No. 189—Bristol, Conn.—The Bristol & Plainsville Ry. Co. will be in the market about Apr. 1 for 8000 tons of anthracite coal. Address Pur. Agt. E. Cockings, Bristol & Plainsville Ry. Co., Bristol, Conn.

No. 190—Hyde Park, Mass.—The B. F. Sturtevant Co. will be in the market for about 7000 tons of bituminous coal, deliveries to commence about Apr. 1. Address Pur. Agt. H. P. Orrok, B. F. Sturtevant Co., Hyde Park, Mass.

No. 191—Metropolis, Ill.—The local water and light department will be in the market during March or April for about 2700 tons of 2-in. screenings. This business is usually closed at about $1.60 per ton. Address Frederic N. Cover, C. E., City of Metropolis Water & Light Dept., Metropolis, Ill.

No. 192—Rockville Center N. Y.—The local city government will be in the market for about 2500 tons of bituminous coal during the latter part of March. This business is customarily done at $3.53 per ton. Address Village Clk. George S. Utter, Rockville Center, N. Y.

No. 193—Hartford, Conn.—The Pratt & Cady Co. at this place will contract for 2700 tons of anthracite coal about Apr. 1. Address Pur. Agt. John S. Camp, Pratt & Cady Co., Hartford, Conn.

No. 194—New York, N. Y.—The Atlantic, Gulf & Pacific Co. will be in the market on Apr. 1 for approximately 30,000 tons of bituminous coal. The deliveries are to be made wherever the company may be doing work. Address Pur. Agt. H. E. Shaver, Park Row Bldg., New York, N. Y.

No. 195—Holyoke, Mass.—The Valley Paper Co., Holyoke, will be in the market about Apr. 1 for 4000 tons of bituminous coal. Address Pur. Agt. Chas. B. Prescott, Treasurer of the Valley Paper Co., Holyoke, Mass.

No. 196—St. Johnsburg, Vt.—The E. & T. Fairbanks Co. of this place will be in the market for 3000 tons of anthracite and bituminous coal on Apr. 1. Address Pur. Agt. C. H. Horton, E. & T. Fairbanks Co., St. Johnsburg, Vt.

No. 197—Newport, N. H.—Dexter Richards & Sons Co. of this place will be in the market on Apr. 1 for 2500 tons of soft coal. Deliveries to be made over the next year. Address Pur. Agt. F. W. Brown, Dexter Richards & Sons Co., Newport, N. H.

No. 198—Lawrence, Mass.—The Champion International Co., at this place, will contract about Apr. 1 for 20,000 tons of bituminous coal. Address Pur. Agt. G. F. Russell, Pres., Champion International Co., Lawrence, Mass.

No. 199—Albany, N. Y.—Sealed proposals will be received until 10 a.m., Mar. 2, for furnishing and delivering 457,419,000 lb. of coal to the various state hospitals. Address Purchasing Committee for New York State Hospitals, Room 138, Capitol, Albany, N. Y.

No. 200—Topsham, Me.—The Pejepscot Paper Co. at this place will contract for 25,000 tons of soft coal for delivery over the next year, beginning Apr. 1. Address Treas. W. W. Nearing, Topsham, Me.

No. 201—New Britain, Conn.—North & Judd Mfg. Co. at this place will be in the market for 5000 tons of bituminous coal on Apr. 1. Address Pur. Agt. F. W. Holmes, New Britain, Conn.

No. 202—Portland, Me.—The Portland Iron & Steel Co. will be in the market for about 15,000 tons of gas coal on Apr. 1. Deliveries to be made over the next year. Address Pur. Agt. R. W. Boutwill, Portland Iron & Steel Co., Portland, Me.

No. 203—Revere, Mass.—The National Fire Proofing Co., at this place, will be in the market about Apr. 1 for 7500 tons of bituminous coal. Address Pur. Agt., National Fire Proofing Co., John Hancock Bldg., Boston, Mass.

No. 204—New York, N. Y.—The Boston & Albany R.R. Co. will be in the market about Apr. 1 for 700,000 tons of bituminous coal. Address Gen. Pur. Agt. F. H. Green, Grand Central Station, New York, N. Y.

No. 205—Norristown, Penn.—The local Board of Education will be in the market during the month of April for 165 tons of anthracite, egg and stove coal each, 225 tons of pea, and 150 tons of bituminous coal. Customary prices are: Egg, $6.05; stove, $6.35; pea, $4.70; bituminous, $3.50. Bids are received through the secretary of the board. Address Sec. Harry W. Akins, 717 DeKalb St., Norristown, Penn.

No. 206—Woonsocket, R. I.—The local school board will be in the market some time during April for about 1000 tons of the best Lehigh and Scranton coal. Tenders are usually invited by letter from the local dealers, and the contract awarded to the lowest bidder. Address Chn. of Com. on Supplies, T. Guerin, care of Alsace Worsted Co., Woonsocket, R. I.

No. 207—Concord, N. H.—The United Gas Improvement Co. at this place will be in the market for 1000 tons of anthracite coal, delivery to be made over the next year beginning Apr. 1. Address Pur. Agt. J. A. Pearson, United Gas Improvement Co., Philadelphia, Penn.

No. 208—St. Peter, Minn.—The local electric-light company will be in the market Apr. 1 for between 1200 and 1400 tons of Wilmington egg coal. The customary price is about $4.65 delivered. Address Supt. F. N. Wilson, St. Peter Electric Light & Water Works, St. Peter, Minn.

No. 209—Huntingburg, Ind.—The local electric-light department will be in the market for 2065 tons of coal on Apr. 1. The customary price on this business is about $1.45, and a soft grade of coal from southern Indiana is generally used. Address F. G. Kattishburg, care of Huntingburg Electric Light Co., Huntingburg, Ind.

No. 210—Lawrence, Mass.—The Geo. C. Kunhardt Co. will be in the market about Apr. 1 for 5000 tons of bituminous coal. Address Pur. Agt. A. P. Thompson, Lawrence, Mass.

No. 211—St. Albans, Vt.—The Central Vermont Ry. Co. will be in the market for 190,000 tons of anthracite and bituminous coal on Apr. 1. Address Pur. Agt. J. B. Laurie, St. Albans, Vt.

No. 212—Hartford, Conn.—The Hartford Rubber Works will be in the market about Apr. 1, for 10,000 tons of anthracite and bituminous coal. Address Pur. Agt. C. A. Emerson, 42 Broadway, New York, N. Y.

No. 213—Great Works, Me.—The Penobscot Chemical Fibre Co. at this place will be in the market for 20,000 tons of bituminous coal on Apr. 1, delivery to be made over the next year. Address Pur. Agt. E. H. Clapp, Penobscot Chemical Fibre Co., Great Works, Me.

CONTRACTS AWARDED

No. 84—New York, N. Y.—This contract (pp. 318 and 356) has been awarded to Meyer-Denker-Sinram Co., 910 East Fifth St., New York, N. Y., at $6.75 per ton. Address Contract Clk. B. Lamb, Room 1034, Dept. of Public Charities, Municipal Bldg., New York.

No. 89—Washington, D. C.—The awards on this contract (pp. 318 and 356), which provides for furnishing and transporting coal for the Navy, under bids opened Feb. 10, were as follows:

Castner, Curran & Bullitt, for furnishing and delivering 8000 tons coal at Portsmouth, N. H., $3.65 per ton.

Crowell & Thurlow, for transporting 12,000 tons of coal from Hampton Roads to Portsmouth, N. H., at $1.05 per ton.

Pocahontas Fuel Co., for furnishing and delivering 5000 tons at Key West, Fla., $5 per ton.

Pendleton Bros. for transporting 1500 tons from Philadelphia to Key West, Fla., $2.25.

Address Paymaster-General of the Navy Samuel McGowan, Washington, D. C.

No. 90—New York, N. Y.—This contract (p. 318), which provides for furnishing about 350 gross tons of anthracite coal, has been awarded to Burns Bros., at $613. The only other bid submitted was from the Jurgen-Rathjen Co., at $626. Address Chn. of the Comn., Alrick H. Man, Board of Trustees, Hunter College, Dept. of Education, Park Ave. and 59th St., New York.

No. 91—Jackson, Ohio—This contract (p. 318), which provides for furnishing coal to the electric-light plant for a period of 11 months, has been awarded to Hollberg & Law, for No. 2 mine-run coal at $1.60 per ton, and No. 2 nut and slack coal at 90c. per ton. Address Dir. of Pub. Ser. R. L. Lamb, Jackson, Ohio.

No. 120—Everett, Mass., and Providence, R. I.—The Stone & Webster Co. has placed this contract (p. 357) with the New England Coal & Coke Co. The contract involves 79,500 tons of mine-run coal, to be delivered as follows: 18,000 tons to Everett, Mass.; 26,500 tons Providence, R. I., and 35,000 tons at Pawtucket, R. I. Address R. E. Hamilton, 147 Milk St., Boston, Mass.

No. 121—Baltimore, Md.—This contract (p. 357), of the American Tobacco Co. has been closed though terms are not available. The contract calls for 5000 tons of Orenda grade coal, instead of 3000, as stated in a previous issue. Address Pur. Agt. J. A. Powell, American Tobacco Co., Baltimore, Md.

No. 125—Washington, D. C.—Bids on this contract (p. 357), which provides for furnishing 12,000 tons of Navy Standard coal for delivery at Boston, Mass., and 1000 tons at Port Royal, S. C., were as follows:

Bidder	Boston	Port Royal
American Coal Exporting Co.	...	$4.09
Edward M. Alden Co.	$3.85	4.55
William C. Atwater	3.65	3.45*
C. G. Blake Co.	3.88	4.24
Chesapeake & Ohio Coal Agency	3.60	...
Chesapeake & Ohio Coal & Coke Co.	3.70	4.45
Castner, Curran & Bullitt	3.49*	...
Darrow Mann Co.	3.77	...
H. H. Hartwell	3.75	...
Maryland Coal & Coke Co.	3.70	3.61
Archibald McNeil & Sons Co.	3.73	4.48
Northern Coal Co.	3.78	...
New England Coal & Coke Co.	3.80	...
Pocahontas Fuel Co.	3.70	4.00
C. H. Sprague & Son	3.78	...
Smokeless Fuel Co.	...	4.11
Willett-Martin Co.	3.73	...
Willard Bros.	3.78	...
J. H. Weaver & Co.	3.45	...
West Virginia Coal Co.	3.85	4.10

*Awards: 12,000 tons for Boston to Castner, Curran & Bullitt, at $3.49; 1000 tons for Port Royal to William C. Atwater, at $3.45.

Address Paymaster-General of the Navy Samuel McGowan, Washington, D. C.

No. 141—Boston, Mass.—This contract (p. 358), which calls for 50,000 tons of New River Pocahontas mine-run coal, to be delivered at Tidewater in equal monthly proportions, has been placed with the New England Coal & Coke Co. Address R. E. Hamilton, 147 Milk St., Boston, Mass.

NOTES

The Commissioners of Foster County, North Dakota, have awarded a contract for furnishing coal for the Court House at Carrington, N. D., to Edward Callahan, local agent for the Dickinson Lignite Coal Co.